भारतीय मानक
Indian Standard

IS 15500 (Part 1 to 8) : 2021

गहराई से पानी निकालने वाले हथबरमें, प्रयुक्त होने वाले घटक और विशेष औज़ार — विशिष्टि

(पहला पुनरीक्षण)

Deepwell Handpumps, Components and Special Tools — Specification

(First Revision)

ICS 23.080

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Hand Pumps Sectional Committee, MED 27

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Hand Pump Sectional Committee had been approved by the Mechanical Engineering Divisional Council (MEDC).

This Standard was first published in 2004. Experience gained in implementation of this Standard necessitates this revision and certain changes that are necessary have been incorporated. In this revision of IS 15500, all amendments have been reviewed and incorporated.

Following important changes have been made in this revision:

a) Force and lift handpump (FLP) has been incorporated in this revision, and

b) Detailed general requirements for different components used in the pump have been incorporated.

Force and lift hand pump are used for pumping water from a well to an over head tank directly. The pump is manually operated and is very useful to lift water for storage and distribution, and has a good demand in Schools/Colleges/Dispensaries/Offices located in rural areas.

For the purpose the deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis (OK) shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off values should be the same as that of the specified value in this standard.

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 1 GENERAL

(First Revision)

1 SCOPE

1.1 This Indian Standard (Part 1) covers the following handpumps including components thereof and special tools required for their installation/maintenance, suitable for lifting water from deep set borewells, covering static water level (SWL) range from 20 m to 90 m:

a) Deepwell handpump — STANDARD (SDWP);
b) Deepwell handpump — VLOM 65 (VLOM-65);
c) Deepwell handpump — VLOM 50 (VLOM-50);
d) Deepwell handpump — EXTRA DEEP (EDWP); and
e) Deepwell handpump — FORCE LIFT (FLP) .

1.2 The size of the borewell and the range of static water level for each pump is given in Table 1.

Table 1 Borewell and Range of Static Water Level for Pumps

(*Clause* 1.2)

Sl No.	Handpump Type	Borewell/Casing Size (N_b, *Min*) (mm)	SWL (*Range*) (m)
(1)	(2)	(3)	(4)
i)	STANDARD	100	20-40
ii)	VLOM-65	125	20-30
iii)	VLOM-50	100	20-40
iv)	EXTRA DEEP	100	40-90
v)	FORCE LIFT	100	20-40

1.3 The construction, dimensions, materials and other specifications of the pumps, their components, and special tools have been categorized in the following eight parts:

a) Part 1 General;
b) Part 2 Handpumps;
c) Part 3 Handpump sub-assemblies;
d) Part 4 Steel components;
e) Part 5 Cast iron components;
f) Part 6 Brass/bronze or stainless steel cast components;
g) Part 7 Rubber components; and
h) Part 8 Special tools.

1.3.1 The requirements of this part shall be followed in all other parts wherever applicable.

2 REFERENCES

The standards listed at Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

3 NOMENCLATURE

A brief description of the main constituents of a deepwell handpump is given in Fig. 1.1.

3.1 Pump Head Assembly — The above ground mechanism operating the plunger.

3.2 Cylinder Assembly — Contains plunger, check valve, etc. lifting water upward in each stroke.

3.3 Connecting Rod — Provides linkage between the pump head and cylinder.

3.4 Riser Pipe — Carries water from the cylinder to the water tank.

4 DIMENSIONS AND TOLERANCES

4.1 The material, dimensions and tolerances for different components/assemblies shall be as provided in respective figures given in Parts 2 to 8.

NOTE — Figure pertaining to a specific pump or pumps, has an indication to this regard in its title. The figures without such reference are common to all the pumps.

4.2 Unless otherwise specified, the tolerance on the un-machined dimensions related to the following items used in the pump production, shall be governed by their respective Indian Standards:

a) Hot/cold rolled carbon steel plates, sheets, flat and bars;

b) Steel sections;
c) Brass tube; and
d) Cast iron bronze castings.

4.2.1 For all other linear and angular dimensions (including fillet radii and chamfer height) where tolerances are not specified, the tolerance as per Class C (coarse) of IS 2102 (Part 1) shall be followed for the manufacturing of the components. However, as also stated in **6** of the referred standard, any deviation on such dimensions, observed during the inspection of the final product, shall not lead to rejection unless it adversely affects the performance and durability of the component/assembly/handpump.

4.3 Some components are likely to undergo minor changes in the dimensions after welding and/or anti-corrosive treatment, the dimensions on such components shall be checked before the above processes.

4.4 The tolerance of metric thread shall conform to IS 14962 (Part 3), Class 6 g for bolts and 6H for nuts.

4.5 Till such time adequate gauging practices are available for knuckle threads, interchangeability between the mating components shall be ensured.

4.6 The standard parts like fasteners, ball bearings etc. used in the handpump assembly and sub-assemblies shall be as per specifications given in Annex B.

4.6.1 All bolts, nuts and washers except high tensile bolts shall be electro-galvanized conforming to IS 1367 (Part 11).

5 RAW MATERIALS

5.1 Steel

5.1.1 The mild steel plates/sheets, angle iron, seamless tube, round/square bars used for the manufacture of the pump components shall conform to Quality A of Grade E 250 of IS 2062. Front cover of Head Assembly shall be made from 'CR5 grade' steel of IS 513 (Part1).

5.1.2 The mild steel bright bar, drawn shall conform to IS 9550 with mechanical properties as follows:

Tensile strength 540-790 MPa, and

Elongation 12 percent, *Min*

The surface should be crack free on visual inspection.

5.1.3 The hexagonal coupler, generally manufactured from cold drawn bars shall be stress relieved before welding to avoid cracks.

5.2 Stainless Steel

5.2.1 The material for stainless steel connecting rod and plunger rod shall conform to steel designation X04 Cr 19 Ni 9 of IS 6603 with following mechanical properties:

a) Tensile strength 800 MPa, *Min; and ok*
b) Elongation15 percent, *Min.*

5.2.2 The handle axle and push rod shall be manufactured from stainless steel having following properties:

5.2.2.1 *Chemical composition*

a) Carbon	0.12-0.25 percent
b) Manganese	14-15 percent
c) Chromium	16.5-18 percent
d) Nickel	1-1.75 percent
e) Nitrogen	0.32-0.40 percent
f) Phosphorus	0.030 percent, *Max*
g) Sulphur	0.030 percent, *Max*
h) Silicon	0.5 percent, *Max*

5.2.2.2 *Physicalproperties:*

a) Yield strength	448 MPa, *Min*
b) Tensile strength	758 MPa, *Min*
c) Elongation	30 percent, *Min*
d) Hardness	98 HRB, *Max*

5.2.3 Components covered in Part 6 (Fig. **6.2** to Fig. **6.16**) of the specification may be manufactured from stainless steel casting. The material of steel casting shall meet the requirements of IS 3444 grade 1 for chemical and mechanical properties.

5.3 Cast Iron

Grey iron castings shall conform to Grade FG 200 or higher grade of IS 210.

5.4 Brass

The brass tube used for cylinder lining shall conform to grade Cu Zn 30 As of IS 407 and shall be temper annealed.

5.5 Bronze

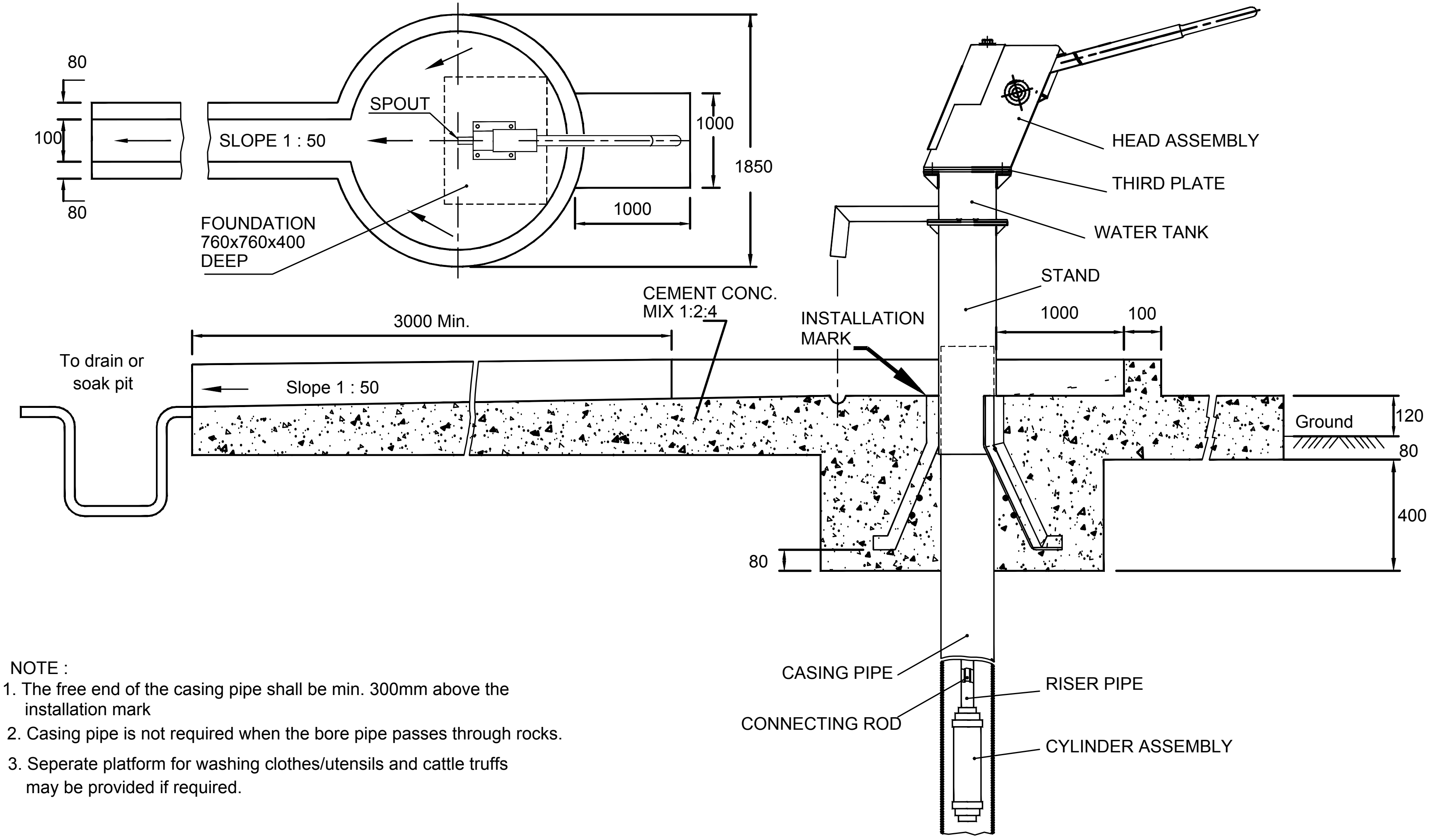
5.5.1 Bronze castings shall conform to grade LTB 2 of IS 318 with hardness 55 HB, *Min***.** Alternatively Naval brass conforming to IS 6912 can be used to forge the components.

5.5.2 Bronze castings shall be free from lead segregation.

5.6 Rubber

5.6.1 Rubber components shall be manufactured from nitrile rubber compound as established by test method given in IS 3400 (Part 22).

5.6.2 The physical properties of nitrile rubber components shall be as given below:



NOTE :

1. The free end of the casing pipe shall be min. 300mm above the installation mark
2. Casing pipe is not required when the bore pipe passes through rocks.
3. Seperate platform for washing clothes/utensils and cattle truffs may be provided if required.

All dimensions in millimetres

FIG. 1.1 TYPICAL SET-UP FOR DEEPWELL HAND PUMP

a) Shore hardness on A scale shall be as specified in the Fig. 7.1 to 7.18

b)	Tensile strength	12.6 MPa, *Min*
c)	Elongation at break	150 percent, *Min*
d)	Compression set, 24 h at 70 °C	20 percent, *Max*
e)	Volume Change, 22 h at 40 °C	+ 25 percent 0 percent

5.6.2.1 The above properties shall be checked as per the following Indian Standards:

a) Shore hardness	IS 3400 (Part 2)
b) Tensile strength, elongation	IS 3400 (Part 1)
c) Compression set	IS 3400 (Part 10)
d) Volume change	IS 3400 (Part 6)

5.6.3 If it is not possible to carry out some tests on the component itself, test shall be carried out on press cured slabs made from the same mix and vulcanized as closely as possible to the same degree as the component.

5.7 Test Records

5.7.1 The manufacturer shall maintain the record of test certificates for each batch of the raw materials procured and used for manufacture of the components (both for in-house or outsourced items).

5.7.2 Daily production records shall be correlated with the raw material batch used in production.

6 ANTI-CORROSIVE TREATMENT

6.1 Electro-galvanizing

The following components shall be electro-galvanized and passivated conforming to service condition No. 4 of IS 1573:

a) Connecting rod (mild steel);
b) Bearing spacer; and
c) Washer.

6.1.1 The cleaning of electro-galvanized threads is permitted to achieve necessary fitment.

6.2 Galvanizing

The following parts shall be hot dip galvanized according to IS 4759:

a) Stand;
b) Water tank;
c) Head;
d) Cover;
e) Handle;
f) Third plate;
g) T-bar (EDWP);
h) Counter weight (EDWP);
j) Socket for riser pipe; and
k) Cone plate.

6.2.1 Galvanized assemblies shall be given chromate conversion coating according to **5.9** of IS 2629.

6.3 Painting

6.3.1 Exterior surfaces of cast iron components shall be given the following treatment:

a) One coat of red oxide primer, conforming to IS 2074; and
b) Two coats of synthetic enamel paint conforming to IS 2932 (Part 1).

6.3.2 Chain coupling shall be given a coating each of epoxy primer and paint.

6.3.3 Chain assembly shall be boiled in graphite grease for better anti-corrosion.

7 WORKMANSHIP

7.1 All components shall be free from rough edges, burrs and other surface defects. The sharp machined edges shall be filed smooth.

7.2 Flanges shall be reasonably flat to provide proper matching of the holes to ensure unrestricted insertion of the bolts when assembled with counterpart.

7.3 Castings shall be sound, clean and free from gas cavities, blowholes, hard spots, cold shuts, distortion and other harmful defects. They shall be well dressed and fettled.

7.3.1 Unless otherwise specified, the castings shall have all edges rounded off and corners filleted to 3 mm radius.

7.3.2 Castings shall not be repaired or welded.

7.4 The brass liner shall have smooth finish and shall be free from pitting and scoring mark. No cracks in brass tube shall be permissible on flaring.

7.5 Welding

7.5.1 Welding of mild steel components shall be done in accordance with IS 9595.

7.5.2 Welding for stainless steel components shall conform to IS 2811. Alternatively, stainless steel components may be welded by manual arc welding using suitable electrodes conforming to IS 5206.

7.5.3 Unless otherwise specified, the minimum specified thickness of the metal to be welded shall be the guiding factor for deciding the weld fillet size. It shall normally be not less than the metal specified thickness of the metal to be welded.

7.5.4 All welding shall be free from blow holes, pinholes, cracks, etc.

8 RISER PIPES

8.1 Riser pipes shall be hot dipped galvanized, screwed and socketed pipe conforming to IS 1239 (Part 1) medium class with special emphasis on the requirements given in **6.4**. Pipe ends shall have smooth finish and shall be free of burrs or sharp machining chip. Internal surface of pipes shall not have any lump of zinc. One end of each riser pipe shall be fitted with a hot dipped galvanized socket and the other end with a thread protector. The nominal bore and length of each pipe for different handpumps shall be as given in Table 2.

Table 2 Riser Main Details

(*Clauses* 8.1 *and* 8.1.2)

Sl No.	Handpump Type	Riser Main Details		
		Pipe Size mm		*Socket*
		NB	Length	(Figure Ref.)
(1)	(2)	(3)	(4)	(5)
i)	STANDARD	32	3000^{0}_{-25}	Fig. 4.28
ii)	VLOM-65	65	3000^{0}_{-50}	Fig. 4.30
iii)	VLOM-50	50	3000^{0}_{-50}	Fig. 4.29
iv)	EXTRA DEEP	32	3000^{0}_{-25}	Fig. 4.28
v)	FORCE LIFT	32	3000^{0}_{-25}	Fig. 4.28

8.1.1 50 mm NB riser pipes shall pass free bore test using 50 mm diameter mandrel.

8.1.2 The socket for riser pipe shall be manufactured from seamless pipe according to IS 1239 (Part 2), or machined from solid bar conforming to Quality A of Garde E 250 of IS 2062 and shall be hot dipped galvanized. The dimensions of the socket shall be as per drawing mentioned in Table 2.

8.1.3 Poly-tetra-flouro-ethylene (PTFE) tape or its equivalent shall be used on the riser pipe joints before installation.

9 TESTING

9.1 Lot

For the purpose of testing, group of each type of assembly, sub-assembly or component covered in different parts shall be treated as a separate lot.

9.2 Visual Tests

All the constituents in a lot shall be examined for workmanship, finish and visual defects.

9.3 Sampling

9.3.1 Samples shall be drawn from the constituents of the lot conforming to the requirements given in **9.2**.

9.3.2 Unless otherwise specified in the contract or order, the procedure given in IS 2500 (Part 1) shall be followed for sampling inspection.

9.3.3 Unless otherwise mentioned, for the characteristics given in testing clause of all the parts, the single sampling plan with general inspection level I and AQL of one percent as given in Table 1 and II-A of IS 2500 (Part 1) shall be followed.

9.4 Dimensional and Other Tests

Samples drawn as per **9.3** shall be checked for the following tests depending on the assembly, sub assembly or component the lot is comprised of.

9.4.1 *Head Assembly*

9.4.1.1 All flanges in the head assembly lot shall be reasonably flat to provide proper matching of the holes to ensure unrestricted insertion of the bolt.

9.4.1.2 The head assembly shall be put on the leveled water tank bolted to a stand and subjected to the checks given below:

a) The alignment of the chain with respect to the guide bush shall be checked. For this purpose a rod of 12 mm diameter and 100 mm length shall be fitted to the chain coupling. The handle shall be raised and lowered gently. The rod shall pass through the guide bush having a hole of 13.5 ± 0.5 mm, welded on a third plate specially fabricated for the test;

b) The handle shall have reasonably good surface contact with the top and bottom portions of the bracket;

- c) The handle shall be checked for lateral play at the end of square section of the handle, which shall not exceed 2 mm on the either side;
- d) The clearance between the handle and the bracket shall not be less than 1.5 mm; and
- e) The stroke of the pump shall be as provided in Table 3.

Table 3 Stroke Length and Discharge of Pumps

[(*Clauses* 9.4.1.2 e) *and* 9.4.3.4]

Sl No.	Handpump Type	Stroke Length *mm*	Discharge Minimum Litre Forty Strokes/Per Minute
(1)	(2)	(3)	(4)
i)	STANDARD	125 ± 4	15
ii)	VLOM-65	125 ± 4	15
iii)	VLOM-50	125 ± 4	10
iv)	EXTRA DEEP	100 ± 4	12
v)	FORCE LIFT	125 ± 4	15

9.4.1.3 All the head assemblies shall be dismantled and checked for the following:

- a) The fitment of the bearings shall be checked for requirements given in **9.4.2.1**.
- b) All the components shall be checked for critical dimensions in conformance with the relevant figures in Part 4.
- c) When head is re-assembled with handle assembly, it shall be possible to insert handle axle by using a soft hammer/mallet.

9.4.2 *Handle Assembly*

9.4.2.1 The fitment of the bearing shall be checked to ensure that the outer race of the bearing does not move when mild force is applied on inner race of the bearing and the inner race of the bearing shall rotate freely.

9.4.2.2 When assembled with the pump head, the handle assembly shall be tested for the requirements given in **9.4.1.2**.

9.4.2.3 All the components shall be dismantled and checked for critical dimensions in conformance with the relevant figures in Part 4.

9.4.3 *Cylinder Assembly*

9.4.3.1 The cylinder assemblies shall be checked for leakage in the following manner:

The cylinder, with the check valve in place, shall be fitted with one length of riser pipe. The assembly shall be filled with water and kept in vertical position for 10 min. There shall be no leakage of water from the check valve or the caps.

9.4.3.2 The valve assemblies shall be checked for the requirement given in **9.4.4**.

9.4.3.3 Two cylinder assemblies shall be dismantled and checked for the following:

- a) The brass liner shall be fitted in the cylinder body in such a manner that it does not rotate freely with the application of hand force after flaring;
- b) All the components shall be checked for critical dimensions in conformance with the relevant figures in Parts 5 to 7; and
- c) In addition, the plunger rods shall be checked for straightness and thread-formation.

9.4.3.4 Two cylinder assemblies (other than those selected for dimensional checks) shall be placed fully submerged in water in a barrel of 200 litre capacity. The test shall start only after getting continuous flow of water through the spout. The water shall then be collected in a container for 40 continuous strokes to be completed in one minute and the discharge thus measured shall not be less than the values given in Table 3.

9.4.4 *Valve Assemblies*

9.4.4.1 The check valve/plunger valve/bobbin shall be checked for free movement in the assembly.

9.4.4.2 All the components shall be dismantled and checked for critical dimensions in conformance with the relevant figures in Parts 6 and 7.

9.4.5 *Components*

The critical dimensions of all the components shall be checked for conformance with the relevant figure given in the respective part.

9.4.6 *Criteria for Conformity*

A lot shall be considered conforming to the requirements of the standard, if the batch selected according to **9.3** satisfies the criteria for conformity given in the corresponding part depending on the assembly, sub-assembly or component it is comprised of.

10 GUARANTEE

The pumps and accessories shall be guaranteed for 12 months from the date of installation or 18 months from the date of supply whichever is earlier against poor workmanship/bad material. The life of the rubber components shall, however, be guaranteed for only 6 months from the date of supply.

11 MARKING

11.1 The pump head assembly shall have a nameplate incorporating the name and address of the manufacturer, and a serial number correlating it with the production records.

11.2 A code/serial number shall also be punched on the raised portion of the cylinder body, correlating it with the production records.

11.3 The connecting rod shall have steel punch impression indicating manufacturer's identification mark, month and year of manufacture on the 50 mm long hexagonal coupler.

11.4 The following shall be marked on the upper side of bottom flange of water tank in minimum 10 mm size and it shall be legible after galvanizing:

a) 32 — For SDWP and EDWP
b) 50 — For VLOM-50
c) 65 — For VLOM-65
d) 32 — For FLP-32

11.5 All individual components shall bear the manufacturers' identification mark as specified in **11.5.1**. The location of the marking will be so selected that it does not interfere with the performance/functioning of the component.

11.5.1 The head flange, handle, third plate, cone plate, water tank top flange, cover plate and stand flange shall have steel punch impression of the identification mark punched before galvanizing. The impression shall be deep enough so that they shall not be covered under galvanizing.

11.5.2 The stainless steel components shall have steel punch impression of the identification mark.

11.5.3 The cast iron components shall have the mark in raised letters. In addition, the cylinder body shall also bear year of manufacture marked in the same manner.

11.5.4 The bronze components shall have the mark in raised letter or steel punched.

11.5.5 The rubber components shall have the mark embossed during moulding, except that:

a) The components where embossing is not practical, the marking shall be done with waterproof ink printing; and
b) For O-rings, the marking shall be done on the packing.

11.6 BIS Certification Marking

The product(s) conforming to the requirements of this Standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

12 PACKING

12.1 Unless otherwise specified in the contractor order, the packing procedure mentioned in Annex C shall be followed.

12.2 External threads of all the threaded components shall be fitted with suitable thread protectors to avoid transit damage.

12.3 Riser pipe shall be packed as per procedure laid down in IS 4740, unless otherwise specified by the purchaser.

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 2 HANDPUMPS

1 SCOPE

1.1 This Indian Standard (Part 2) specifies the requirements of complete assembly of each type of handpumps (SDWP, VLOM-65, VLOM-50, EDWP and FLP) covered in this standard.

1.2 The handpump assemblies covered in this part shall be exclusive of riser pipes.

1.3 This part shall be read with Part 1. Stipulations provided therein, whichever relevant to the products covered in this part, shall apply.

2 CONSTRUCTION

2.1 The assembly detail of different types of handpumps covered in this part shall be as given in Fig. **2.1** to **2.5**.

2.2 The assembly detail of individual sub-assembly shall be as given in the related figure in Part 3.

2.3 The material and dimensions of the individual component shall meet the requirements given in the related part of this standard.

3 TESTING

3.1 Group of each type of handpump covered in this part shall be treated as a separate lot.

3.2 Test samples shall be drawn as per procedure described in **9.3** of Part 1.

3.3 Sub-assemblies and other components of the handpumps selected as per **3.2** shall be tested as given below.

3.3.1 *Head and Cylinder Assemblies*

The head and cylinder assemblies shall be checked asper the detail given in **9.4.1** and **9.4.3** respectively of Part 1.

3.3.2 *Other Components*

All other steel and rubber components of the pump assembly not covered under **3.3.1** shall be checked for the tests given in **3** of Part 4 and also in **3** of Part 7 respectively.

3.4 Criteria for Conformity

3.4.1 The lot of the pumps shall be considered conforming to the requirements of the standard, if the batch selected according to **3.2** satisfies the requirements given in **3.4.2.**

3.4.2 The number of samples not meeting the requirements of a characteristic, inspected under **3.3.1** and **3.3.2** does not exceed the corresponding acceptance number as specified in IS 2500 (Part 1).

4 MARKING

The requirements given in **11** of Part 1 shall apply.

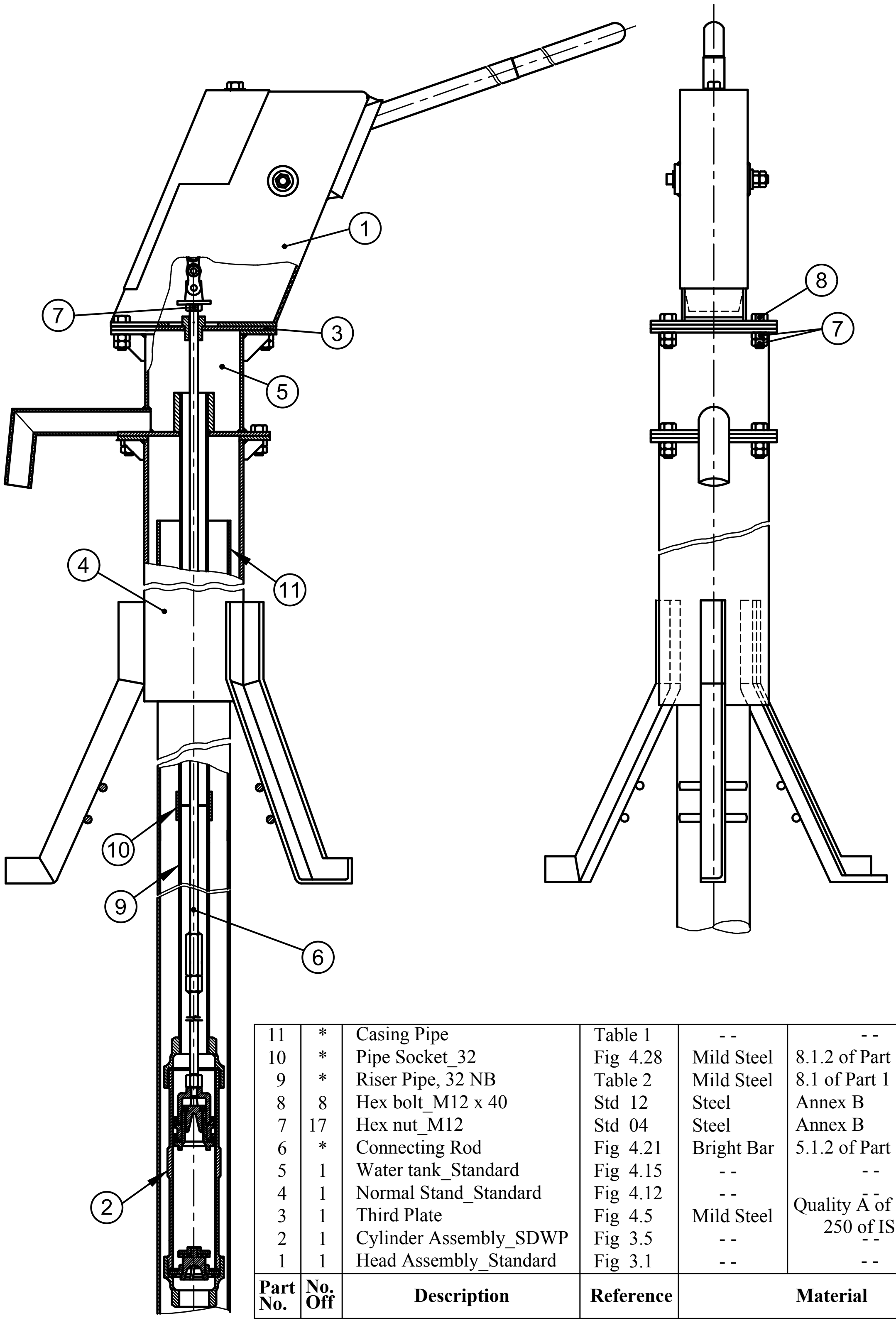
5 PACKING

5.1 In addition to the requirements given in **12.1** and **12.2** of Part 1, the following conditions shall apply for the head assembly.

5.1.1 Handle shall be locked in position with some suitable arrangement before packing the head assembly.

5.1.2 An extra hexagonal nut (STD 04 in Annex B) shall be attached to chain for use of locking the last connecting rod with chain coupling.

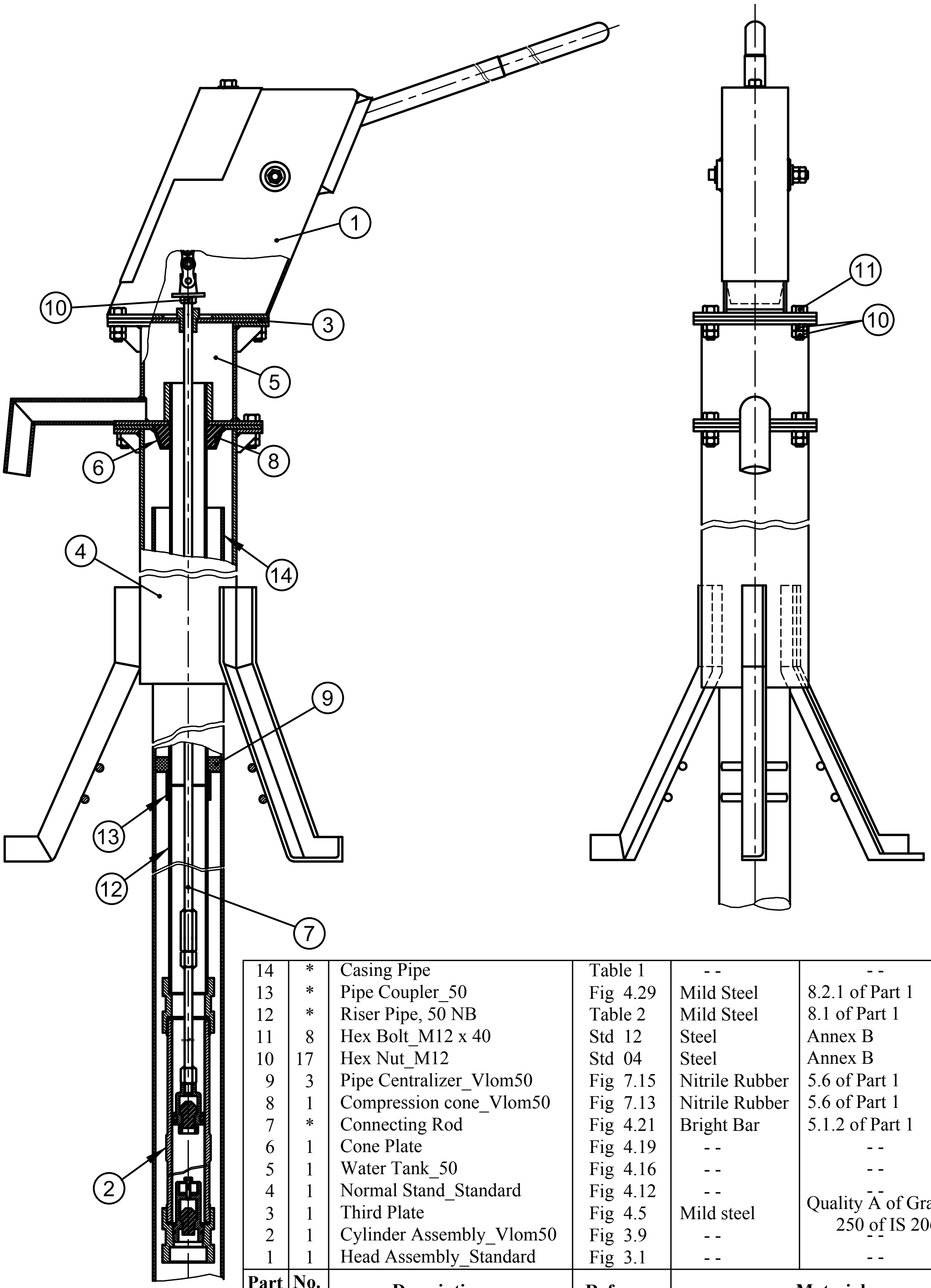
5.1.3 The chain shall be smeared with graphite grease and covered with a polyethylene bag prior to dispatch.



Part No.	No. Off	Description	Reference	Material	
11	*	Casing Pipe	Table 1	- -	- -
10	*	Pipe Socket_32	Fig 4.28	Mild Steel	8.1.2 of Part 1
9	*	Riser Pipe, 32 NB	Table 2	Mild Steel	8.1 of Part 1
8	8	Hex bolt_M12 x 40	Std 12	Steel	Annex B
7	17	Hex nut_M12	Std 04	Steel	Annex B
6	*	Connecting Rod	Fig 4.21	Bright Bar	5.1.2 of Part 1
5	1	Water tank_Standard	Fig 4.15	- -	- -
4	1	Normal Stand_Standard	Fig 4.12	- -	- -
3	1	Third Plate	Fig 4.5	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Cylinder Assembly_SDWP	Fig 3.5	- -	- -
1	1	Head Assembly_Standard	Fig 3.1	- -	- -

* depending on the field conditions/pump settings

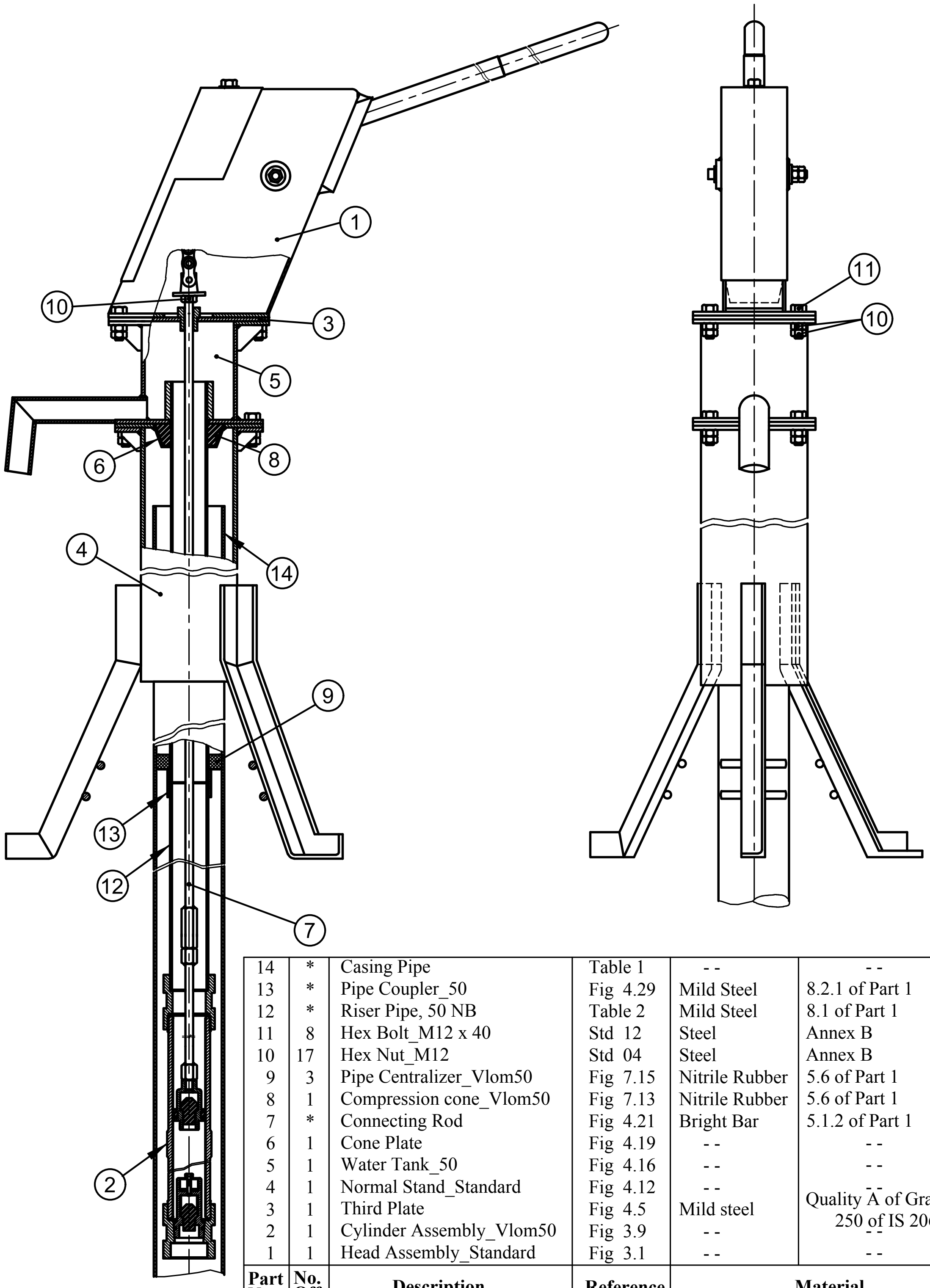
FIG. 2.1 DEEPWELL HANDPUMP - STANDARD (SDWP)



Part No.	No. Off	Description	Reference	Material	
14	*	Casing Pipe	Table 1	- -	- -
13	*	Pipe Coupler_50	Fig 4.29	Mild Steel	8.2.1 of Part 1
12	*	Riser Pipe, 50 NB	Table 2	Mild Steel	8.1 of Part 1
11	8	Hex Bolt_M12 x 40	Std 12	Steel	Annex B
10	17	Hex Nut_M12	Std 04	Steel	Annex B
9	3	Pipe Centralizer_Vlom50	Fig 7.15	Nitrile Rubber	5.6 of Part 1
8	1	Compression cone_Vlom50	Fig 7.13	Nitrile Rubber	5.6 of Part 1
7	*	Connecting Rod	Fig 4.21	Bright Bar	5.1.2 of Part 1
6	1	Cone Plate	Fig 4.19	- -	- -
5	1	Water Tank_50	Fig 4.16	- -	- -
4	1	Normal Stand_Standard	Fig 4.12	- -	- -
3	1	Third Plate	Fig 4.5	Mild steel	Quality A of Grade E 250 of IS 2062
2	1	Cylinder Assembly_Vlom50	Fig 3.9	- -	- -
1	1	Head Assembly_Standard	Fig 3.1	- -	- -

*depending on field conditions/pump settings

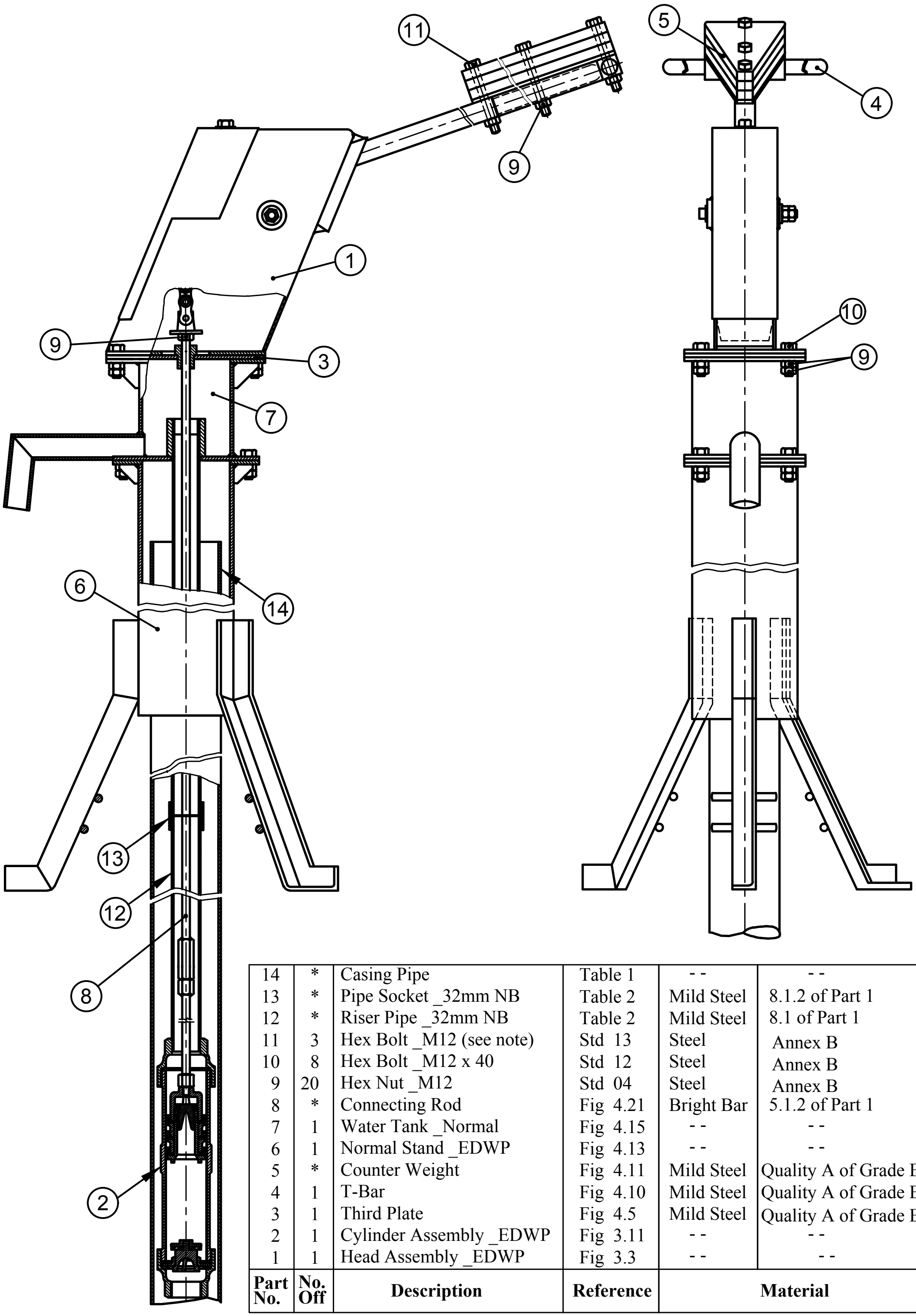
FIG. 2.2 DEEPWELL HANDPUMP - VLOM 65



Part No.	No. Off	Description	Reference	Material	
14	*	Casing Pipe	Table 1	- -	- -
13	*	Pipe Coupler_50	Fig 4.29	Mild Steel	8.2.1 of Part 1
12	*	Riser Pipe, 50 NB	Table 2	Mild Steel	8.1 of Part 1
11	8	Hex Bolt_M12 x 40	Std 12	Steel	Annex B
10	17	Hex Nut_M12	Std 04	Steel	Annex B
9	3	Pipe Centralizer_Vlom50	Fig 7.15	Nitrile Rubber	5.6 of Part 1
8	1	Compression cone_Vlom50	Fig 7.13	Nitrile Rubber	5.6 of Part 1
7	*	Connecting Rod	Fig 4.21	Bright Bar	5.1.2 of Part 1
6	1	Cone Plate	Fig 4.19	- -	- -
5	1	Water Tank_50	Fig 4.16	- -	- -
4	1	Normal Stand_Standard	Fig 4.12	- -	- -
3	1	Third Plate	Fig 4.5	Mild steel	Quality A of Grade E 250 of IS 2062
2	1	Cylinder Assembly_Vlom50	Fig 3.9	- -	- -
1	1	Head Assembly_Standard	Fig 3.1	- -	- -

*depending on field conditions/pump settings

FIG. 2.3 DEEPWELL HANDPUMP - VLOM 50

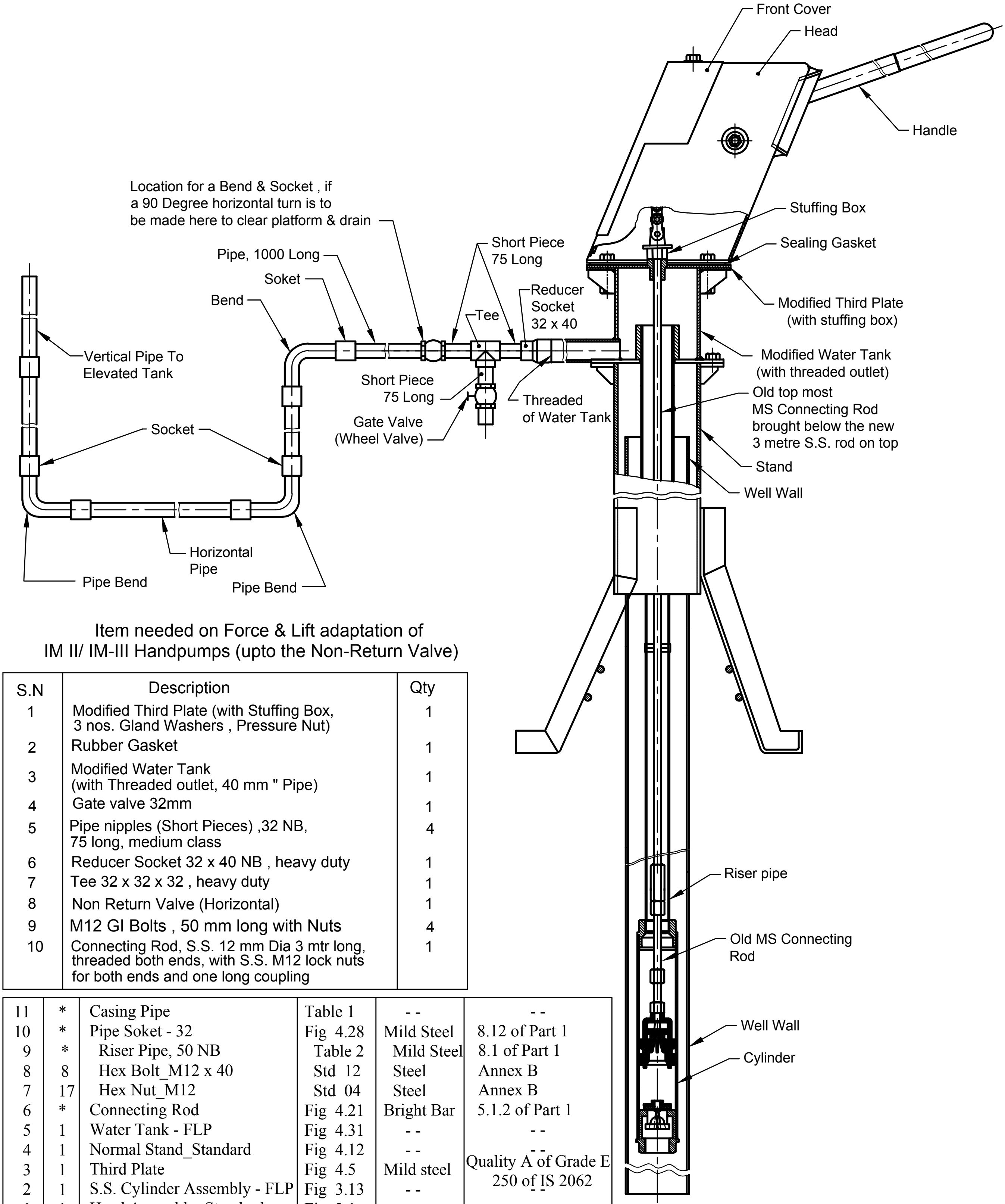


Part No.	No. Off	Description	Reference	Material	
14	*	Casing Pipe	Table 1	- -	- -
13	*	Pipe Socket _32mm NB	Table 2	Mild Steel	8.1.2 of Part 1
12	*	Riser Pipe _32mm NB	Table 2	Mild Steel	8.1 of Part 1
11	3	Hex Bolt _M12 (see note)	Std 13	Steel	Annex B
10	8	Hex Bolt _M12 x 40	Std 12	Steel	Annex B
9	20	Hex Nut _M12	Std 04	Steel	Annex B
8	*	Connecting Rod	Fig 4.21	Bright Bar	5.1.2 of Part 1
7	1	Water Tank _Normal	Fig 4.15	- -	- -
6	1	Normal Stand _EDWP	Fig 4.13	- -	- -
5	*	Counter Weight	Fig 4.11	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	T-Bar	Fig 4.10	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Third Plate	Fig 4.5	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Cylinder Assembly _EDWP	Fig 3.11	- -	- -
1	1	Head Assembly _EDWP	Fig 3.3	- -	- -

* depending on the field conditions/pump settings

NOTE: In case of item 11, the bolt length will depend upon the number of counter weight.

FIG. 2.4 DEEPWELL HANDPUMP - EXTRA DEEP (EDWP)


Front Cover
Head
Handle
Location for a Bend & Socket , if a 90 Degree horizontal turn is to be made here to clear platform & drain
Stuffing Box
Sealing Gasket
Short Piece 75 Long
Pipe, 1000 Long
Soket
Bend
Reducer Socket 32 x 40
Tee
Modified Third Plate (with stuffing box)
Vertical Pipe To Elevated Tank
Modified Water Tank (with threaded outlet)
Short Piece 75 Long
Threaded of Water Tank
Old top most MS Connecting Rod brought below the new 3 metre S.S. rod on top
Gate Valve (Wheel Valve)
Socket
Stand
Well Wall
Horizontal Pipe
Pipe Bend
Pipe Bend
Riser pipe
Old MS Connecting Rod
Well Wall
Cylinder

Item needed on Force & Lift adaptation of IM II/ IM-III Handpumps (upto the Non-Return Valve)

S.N	Description	Qty
1	Modified Third Plate (with Stuffing Box, 3 nos. Gland Washers , Pressure Nut)	1
2	Rubber Gasket	1
3	Modified Water Tank (with Threaded outlet, 40 mm " Pipe)	1
4	Gate valve 32mm	1
5	Pipe nipples (Short Pieces) ,32 NB, 75 long, medium class	4
6	Reducer Socket 32 x 40 NB , heavy duty	1
7	Tee 32 x 32 x 32 , heavy duty	1
8	Non Return Valve (Horizontal)	1
9	M12 GI Bolts , 50 mm long with Nuts	4
10	Connecting Rod, S.S. 12 mm Dia 3 mtr long, threaded both ends, with S.S. M12 lock nuts for both ends and one long coupling	1

11	*	Casing Pipe	Table 1	- -	- -
10	*	Pipe Soket - 32	Fig 4.28	Mild Steel	8.12 of Part 1
9	*	Riser Pipe, 50 NB	Table 2	Mild Steel	8.1 of Part 1
8	8	Hex Bolt_M12 x 40	Std 12	Steel	Annex B
7	17	Hex Nut_M12	Std 04	Steel	Annex B
6	*	Connecting Rod	Fig 4.21	Bright Bar	5.1.2 of Part 1
5	1	Water Tank - FLP	Fig 4.31	- -	- -
4	1	Normal Stand_Standard	Fig 4.12	- -	- -
3	1	Third Plate	Fig 4.5	Mild steel	Quality A of Grade E 250 of IS 2062
2	1	S.S. Cylinder Assembly - FLP	Fig 3.13	- -	- -
1	1	Head Assembly_Standard	Fig 3.1	- -	- -
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

FIG. 2.5 DEEPWELL HANDPUMP (FLP)

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 3 HANDPUMP SUB-ASSEMBLIES

1 SCOPE

1.1 This Indian Standard (Part 3) specifies the requirements of individual sub-assemblies used to assemble each type of hand pump (SDWP, VLOM-65, VLOM-50, EDWP and FLP) covered in this standard.

1.2 This part shall be read with Part 1. Stipulations provided therein, whichever relevant to the components covered in this part, shall apply.

2 CONSTRUCTION

2.1 The assembly details of different handpump subassemblies covered in this part shall be as given in Fig. **3.1** to **3.14**.

2.2 The material and dimensions of the individual component shall meet the requirements given in the related part of this standard.

3 TESTING

3.1 Group of each type of sub-assembly covered in this part shall be treated as a separate lot.

3.2 Test samples shall be drawn as per procedure described in **9.3** of Part 1.

3.3 Depending on the type of sub-assembly, the samples drawn as per **3.2** shall be tested as given below.

3.3.1 *Head Assembly*

The head assembly shall be examined as per the detail given in **9.4.1** of Part 1.

3.3.2 *Handle Assembly*

The handle assembly shall be examined as per the detail given in **9.4.2** of Part 1.

3.3.3 *Cylinder Assembly*

The cylinder assembly shall be subjected to tests detailed in **9.4.3** of Part 1.

3.3.4 *Valve Assemblies*

The valve assembly shall be checked for the requirements provided in **9.4.4** of Part 1.

3.4 Criteria for Conformity

3.4.1 The lot shall be considered conforming to the requirements of the standard, if the batch selected according to **3.2** satisfies the requirements given in **3.4.2**.

3.4.2 The number of samples not meeting the requirements of the characteristics inspected under the corresponding clause(s) of Part 1 as given in Table 4, does not exceed the corresponding acceptance number as specified in IS 2500 (Part 1).

Table 4 Criteria for Conformity

(*Clause* 3.4.2)

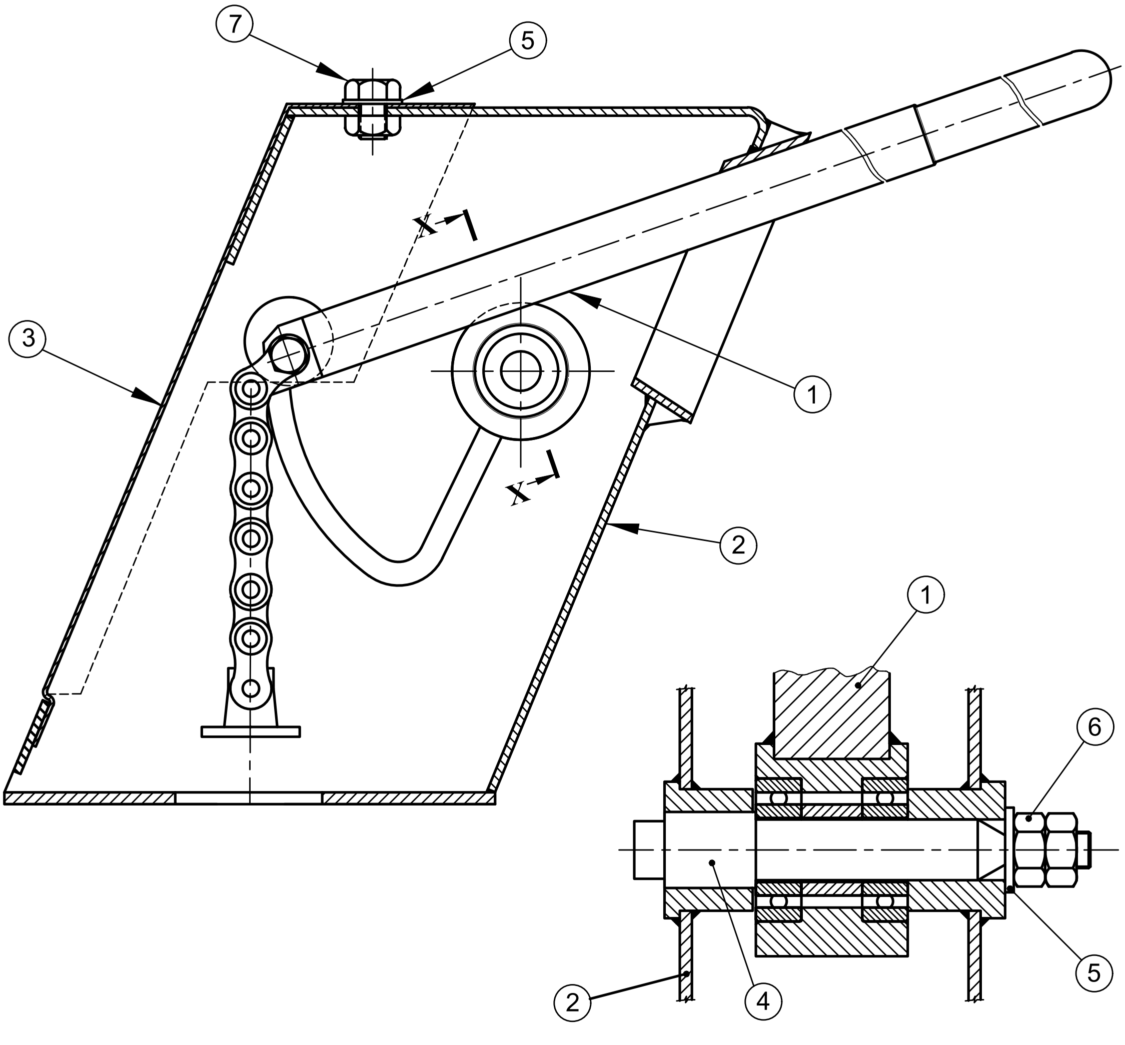
Sl No. (1)	Lot Type (2)	Ref to Cl of Part 1 (3)
i)	Head Assembly	9.4.1
ii)	Handle Assembly	9.4.2
iii)	Cylinder Assembly	9.4.3
iv)	Valve Assembly	9.4.4

4 MARKING

The requirements given in **11** of Part 1 shall apply.

5 PACKING

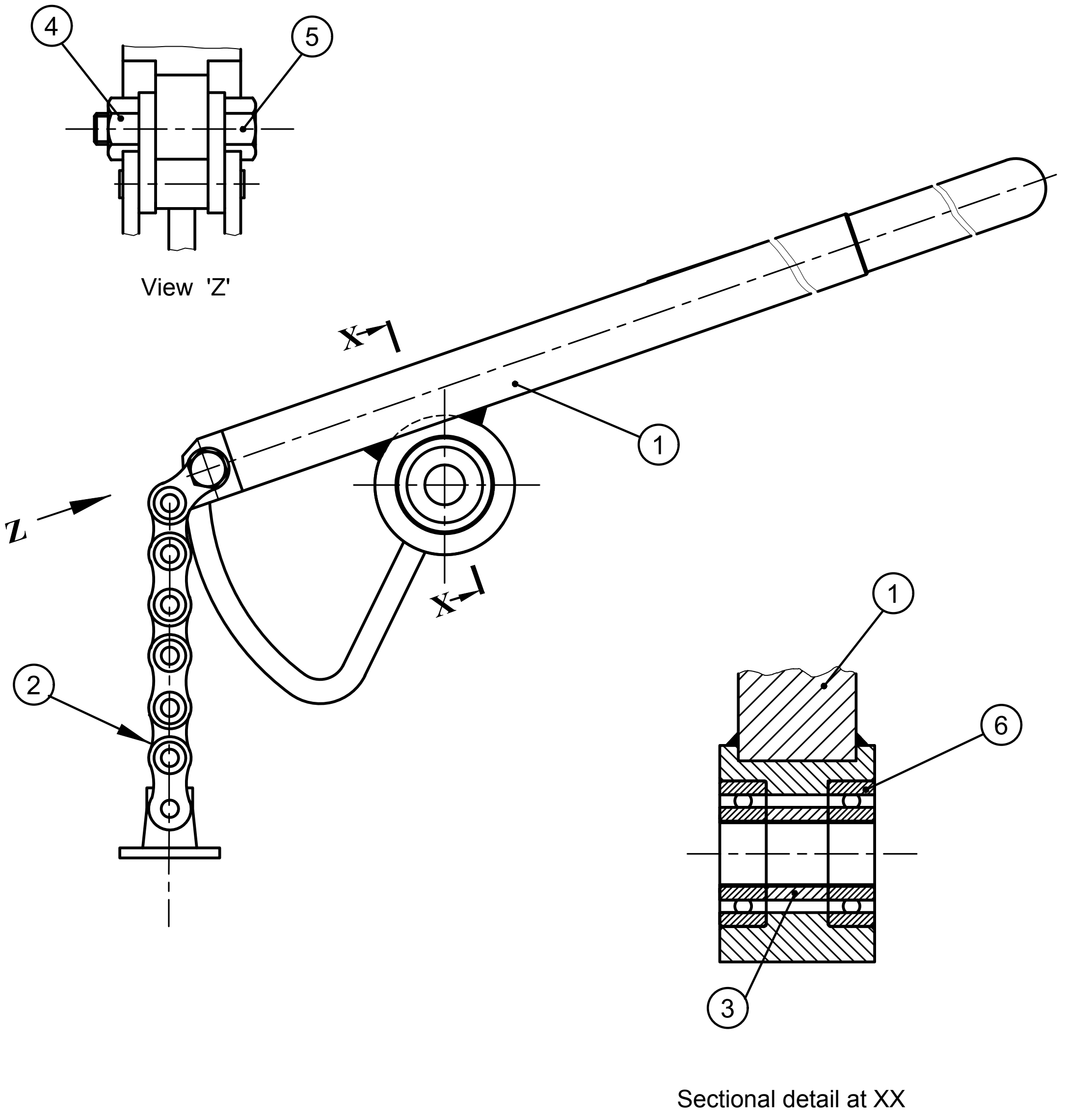
In addition to the requirements given in **12.1** and **12.2** of Part 1, the conditions specific to the head assembly given in **5.1.1** to **5.1.3** of Part 2 shall be applicable.



Sectional detail at XX

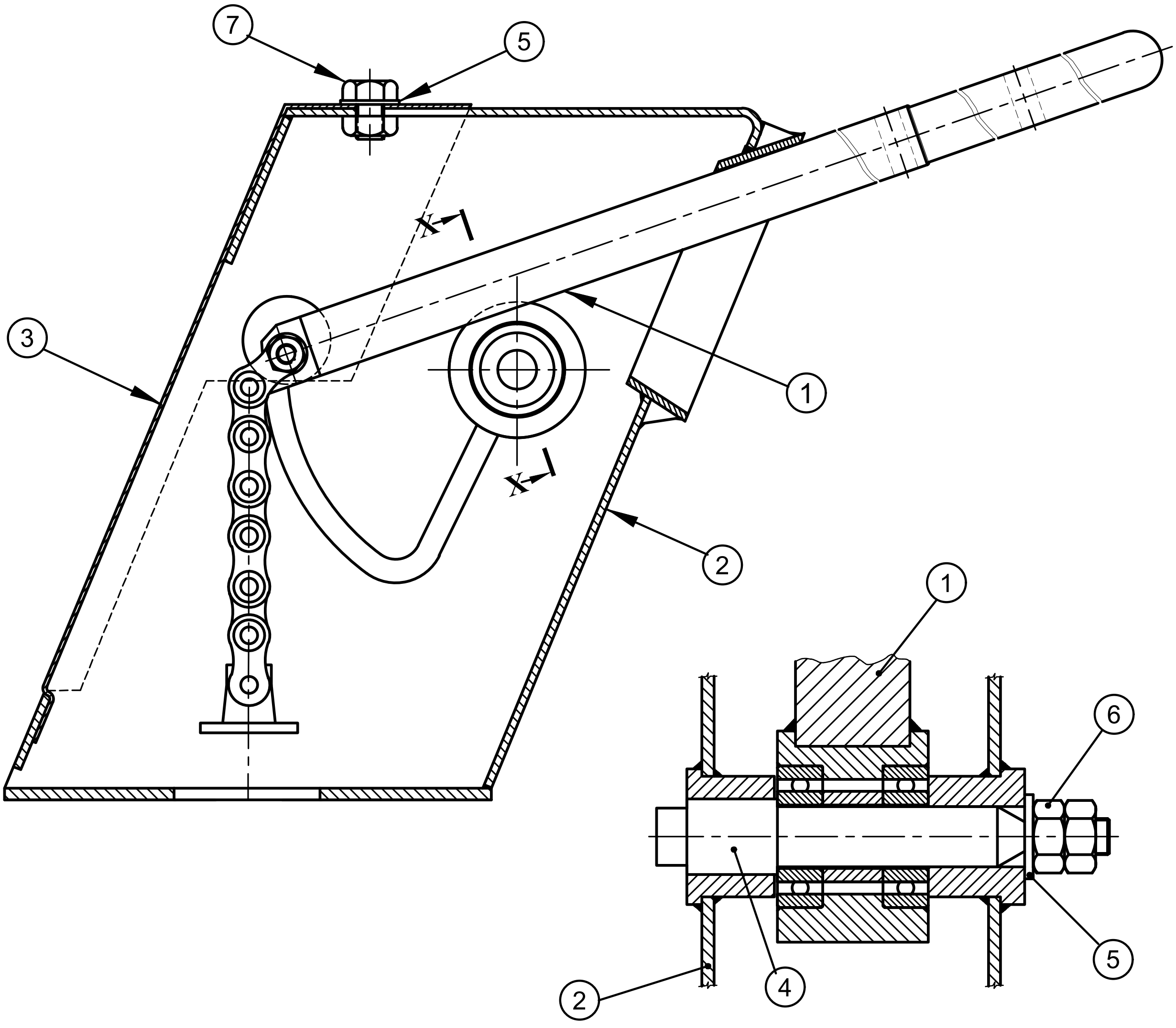
Part No.	No. Off	Description	Reference	Material	
7	1	Hexagonal Bolt_M12 x 20	Std 10	Steel	Annex B
6	1	Hexagonal Nut_M12	Std 04	Steel	Annex B
5	1	Washer	Fig 4.27	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Handle Axle	Fig 4.24	Stainless Steel	5.2 of Part 1
3	1	Front Cover	Fig 4.4	CRS Sheet	CR5 Grade of IS 513(Part 1)
2	1	Head_Standard	Fig 4.1	-	-
1	1	Handle Assembly_Standard	Fig 3.2	-	-

FIG. 3.1 HEAD ASSEMBLY STANDARD
(FOR SDWP, VLOM 65, VLOM 50, AND FLP)



6	2	Bearing, Single side shielded	Std 15	Designation 20 BC 02 PP of IS 6455	
5	1	Hex. Bolt_M10 x 40 (Gr 8.8)	Std 09	HT Bolt	Annex B
4	1	Prevailing torque type Hex. Nut, M10	Std 03	Steel	Annex B
3	1	Bearing Spacer	Fig 4.26	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Chain with Coupling	Fig 4.9	- -	- -
1	1	Handle_Standard	Fig 4.6	- -	- -
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

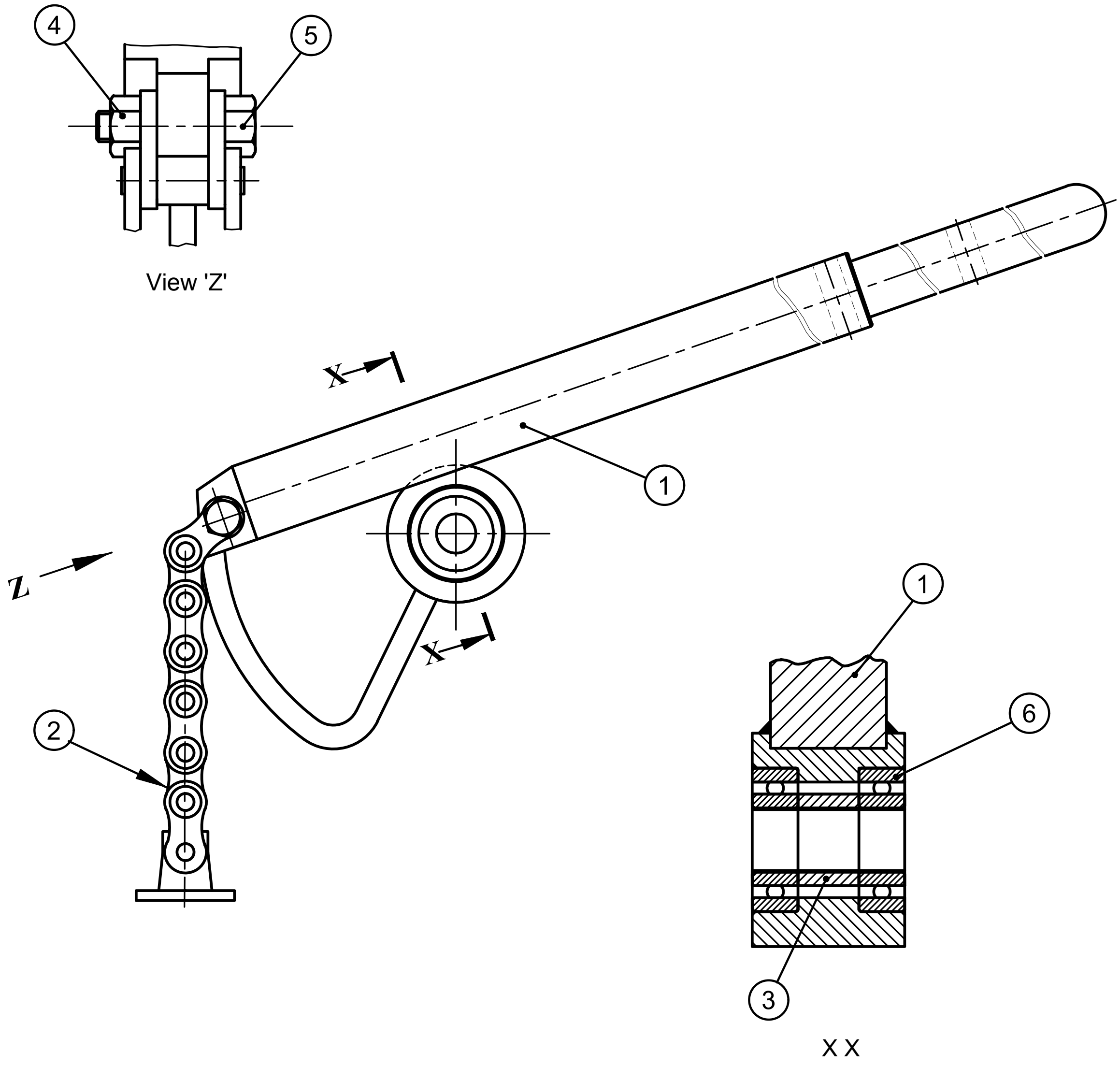
FIG. 3.2 HANDLE ASSEMBLY STANDARD
(FOR SDWP, VLOM 65, VLOM 50, AND FLP)



Sectional detail at XX

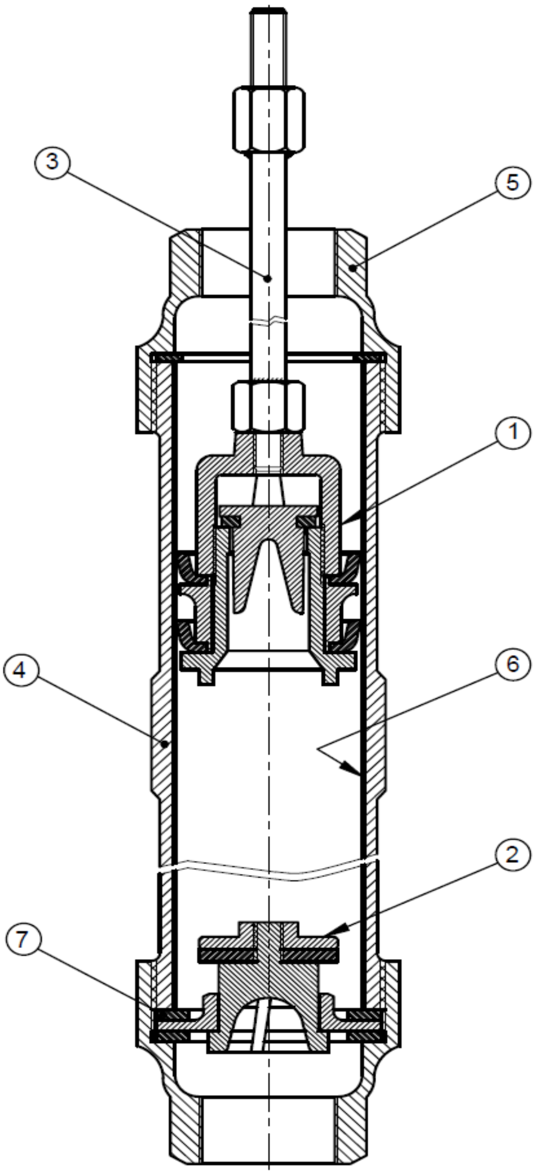
7	1	Hexagonal Bolt_M12 x 20	Std 10	Steel	Annex B
6	1	Hexagonal Nut_M12	Std 04	Steel	Annex B
5	1	Washer	Fig 4.27	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Handle Axle	Fig 4.24	Stainless Steel	Clause 5.2 of Part 1
3	1	Front Cover	Fig 4.4	CRS Sheet	CR5 Grade of IS 513(Part 1)
2	1	Head_EDWP	Fig 4.2	- -	- -
1	1	Handle Assembly_EDWP	Fig 3.4	- -	- -
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

FIG. 3.3 HEAD ASSEMBLY - EDWP



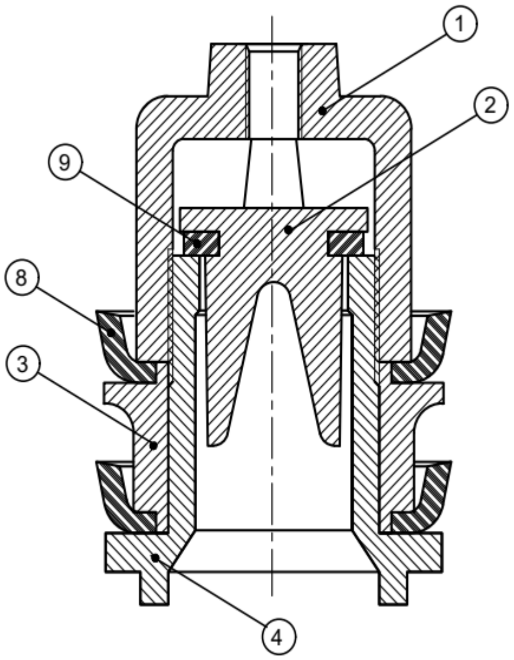
6	2	Bearing, Single side shielded	Std 15	Designation 20 BC 02 PP of IS 6455	
5	1	Hex. Bolt-M10 x 40 (8.8)	Std 9	HT Bolt	Annex B
4	1	Prevailing torque type Hex. Nut, M10	Std 3	Steel	Annex B
3	1	Bearing Spacer	Fig 4.26	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Chain with Coupling	Fig 4.9	- -	- -
1	1	Handle-EDWP	Fig 3.7	- -	- -
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

FIG. 3.4 HANDLE ASSEMBLY - EDWP

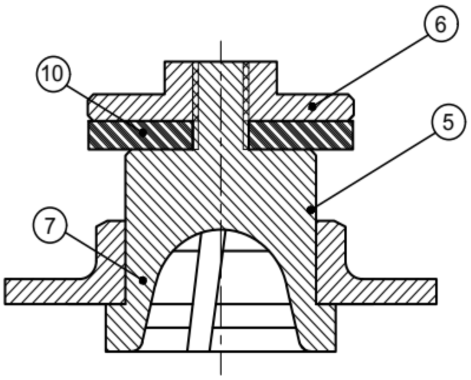


7	3	Sealing Ring-Standard	Fig 7.3	Nitrile Rubber	5.6 of Part 1
6	1	Brass Line-Standard	Fig 6.1A	Brass Tube	CuZn30 As of IS 407
5	2	Reducer Cap	Fig 5.4	Cast Iron	FG 200 of IS 210
4	1	Cylinder Body-Standard	Fig 5.1	Cast Iron	FG 200 of IS 210
3	1	Plunger Rod-Standard	Fig 4.22	Stainless Steel	04Cr18Ni10 of IS 6603
2	1	Check Valve Assembly-Standard	Fig 3.6B	- -	- -
1	1	Plunger Valve Assembly-Standard	Fig 3.6A	- -	- -
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

FIG. 3.5 CYLINDER ASSEMBLY - SDWP AND FLP



3.6A PLUNGER VALVE ASSEMBLY _SDWP

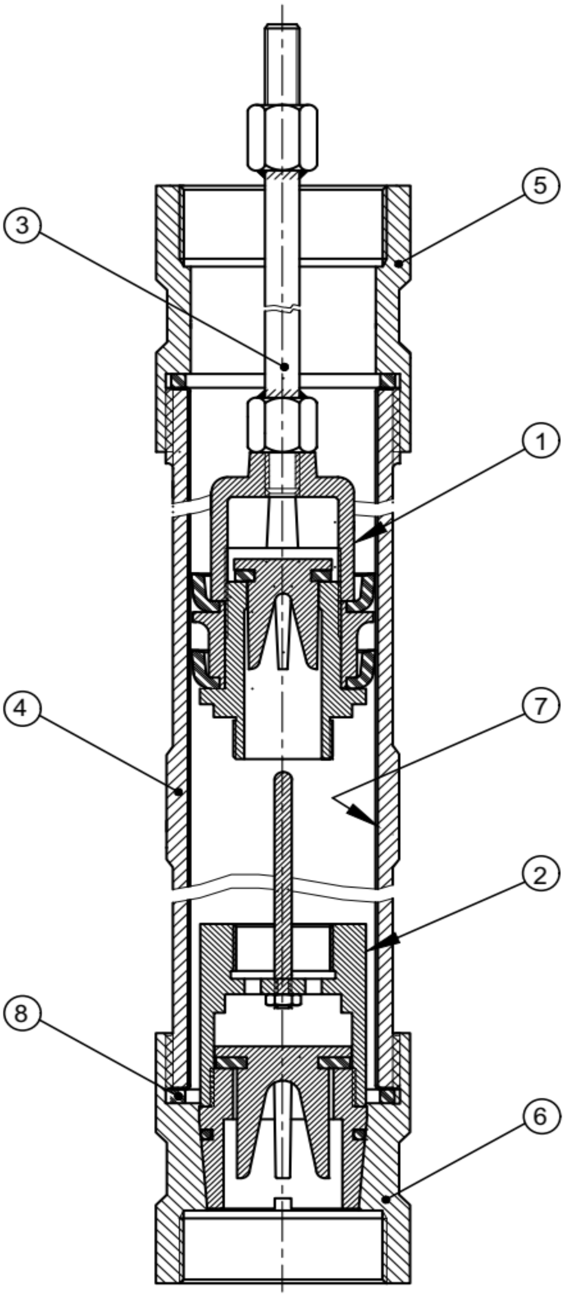


3.6B CHECK VALVE ASSEMBLY _SDWP

Part No.	No. Off	Description	Reference	Material	
10	1	Check Valve Seating-Standard	Fig 7.7	Nitrile Rubber	5.6 of Part 1
9	1	Upper Valve Seating	Fig 7.6	Nitrile Rubber	5.6 of Part 1
8	2	Pump Bucket-Standard	Fig 7.1	Nitrile Rubber	5.6 of Part 1
7	1	Check Valve Seat-Standard	Fig 6.12	Bronze	Grade LTB2 of IS 318
6	1	Rubber Seat Retainer	Fig 6.11	Bronze	Grade LTB2 of IS 318
5	1	Check Valve-Standard	Fig 6.9	Bronze	Grade LTB2 of IS 318
4	1	Follower-SDWP	Fig 6.6	Bronze	Grade LTB2 of IS 318
3	1	Bucket Spacer-Standard	Fig 6.4	Bronze	Grade LTB2 of IS 318
2	1	Upper Valve	Fig 6.3	Bronze	Grade LTB2 of IS 318
1	1	Plunger Yoke Body	Fig 6.2	Bronze	Grade LTB2 of IS 318

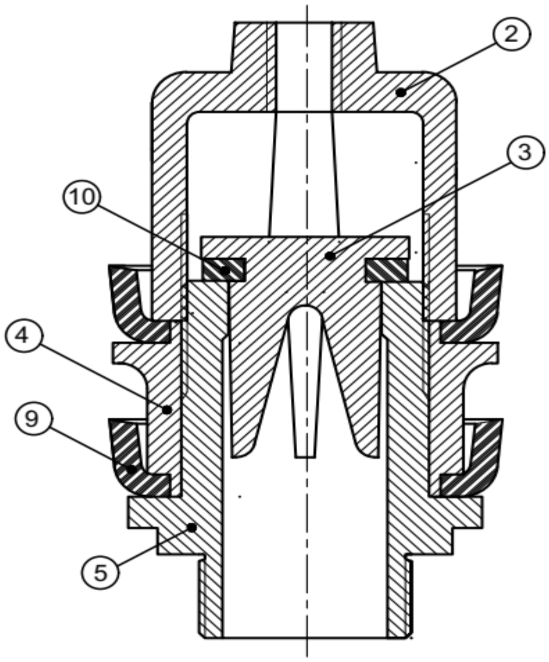
NOTE: Check valve assembly to be punch locked on top at M10 joint at diametrically opposite two points after filing the two surfaces even.

FIG. 3.6 VALVE ASSEMBLIES - SDWP AND FLP

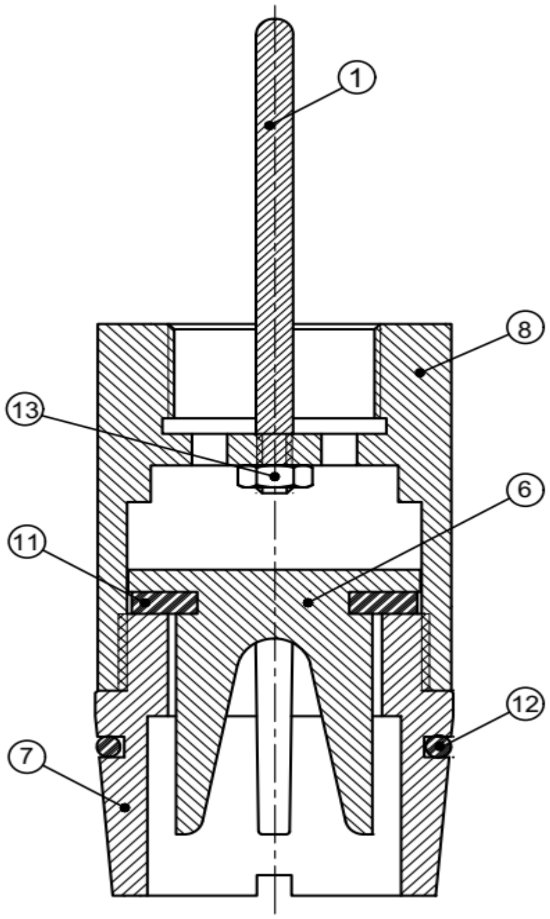


Part No.	No. Off	Description	Reference	Material	
8	2	Sealing Ring-VLOM 65	Fig 7.4	Nitrile Rubber	5.6 of Part 1
7	1	Brass Liner-Long	Fig 6.1B	Brass Tube	CuZn30 As of IS 407
6	1	Bottom Cap-VLOM 65	Fig 5.5B	Cast Iron	FG 200 of IS 210
5	1	Upper Cap-VLOM 65	Fig 5.5A	Cast Iron	FG 200 of IS 210
4	1	Cylinder Body-Long	Fig 5.2	Cast Iron	FG 200 of IS 210
3	1	Plunger Rod-Long	Fig 4.23	Stainless Steel	04Cr18Ni10 of IS 6603
2	1	Check Valve Assembly -VLOM 65	Fig 3.8B	- -	- -
1	1	Plunger Valve Assembly-VLOM 65	Fig 3.8A	- -	- -

FIG. 3.7 CYLINDER ASSEMBLY - VLOM 65



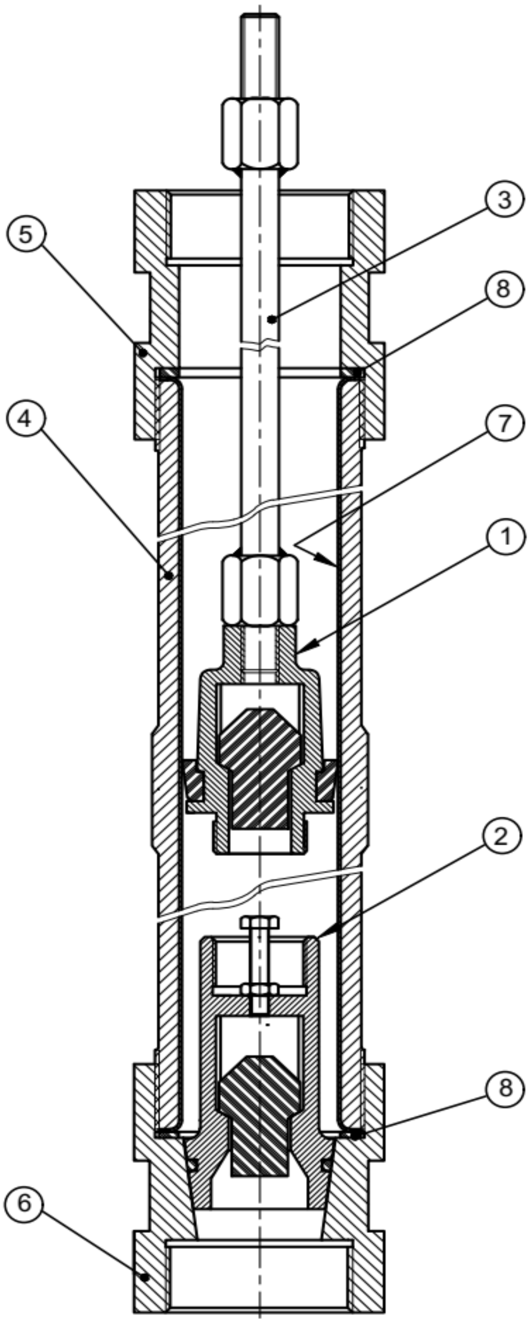
3.8A PLUNGER VALVE ASSEMBLY -VLOM65



3.8B CHECK VALVE ASSEMBLY - VLOM65

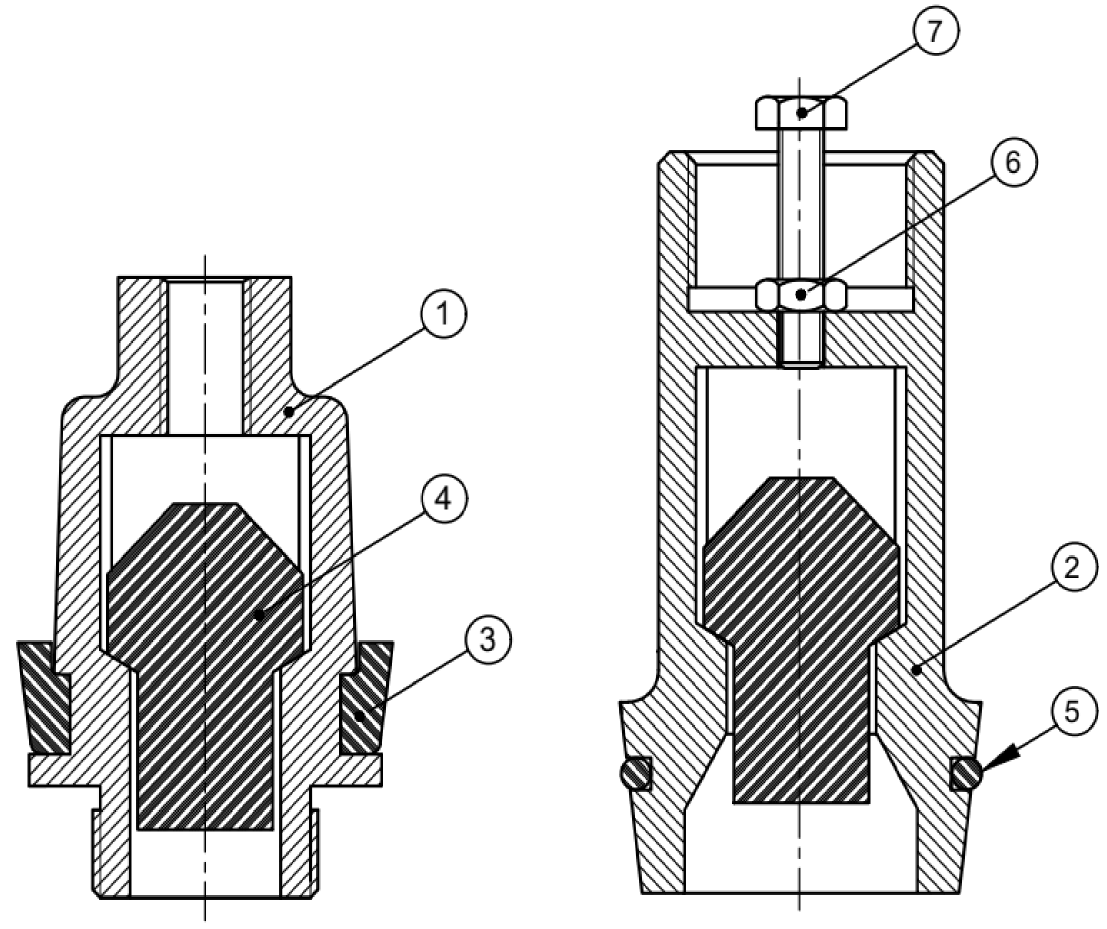
13	1	Check Nut-M6	Std 1	Stainless Steel	Annex B
12	1	O-ring-VLOM65	Fig 7.10	Nitrile Rubber	5.6 of Part 1
11	1	Check Valve Seating-VLOM65	Fig 7.8	Nitrile Rubber	5.6 of Part 1
10	1	Upper Valve Seating	Fig 7.6	Nitrile Rubber	5.6 of Part 1
9	2	Pump Bucket-Standard	Fig 7.1	Nitrile Rubber	5.6 of Part 1
8	1	Cage	Fig 6.14	Bronze	Grade LTB2 of IS 318
7	1	Check Valve Seat-VLOM 65	Fig 6.13	Bronze	Grade LTB2 of IS 318
6	1	Check Valve-VLOM 65	Fig 6.10	Bronze	Grade LTB2 of IS 318
5	1	Follower-VLOM 65	Fig 6.8	Bronze	Grade LTB2 of IS 318
4	1	Bucket Spacer-Standard	Fig 6.4	Bronze	Grade LTB2 of IS 318
3	1	Upper Valve	Fig 6.3	Bronze	Grade LTB2 of IS 318
2	1	Plunger Yoke Body	Fig 6.2	Bronze	Grade LTB2 of IS 318
1	1	Push Rod	Fig 4.25	Stainless Steel	5.2.2 of Part 1
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

FIG. 3.8 VALVE ASSEMBLY - VLOM 65



Part No.	No. Off	Description	Reference	Material	
8	2	Sealing Ring-VLOM 50	Fig 7.5	Nitrile Rubber	5.6 of Part 1
7	1	Brass Liner-VLOM 50	Fig 6.1C	Brass Tube	CuZn30 As of IS 407
6	1	Bottom Cap-VLOM 50	Fig 5.6B	Cast Iron	FG 200 of IS 210
5	1	Upper Cap-VLOM 50	Fig 5.6A	Cast Iron	FG 200 of IS 210
4	1	Cylinder Body-VLOM 50	Fig 5.3	Cast Iron	FG 200 of IS 210
3	1	Plunger Rod-Long	Fig 4.23	Stainless Steel	04Cr18Ni10 of IS 6603
2	1	Check Valve Assembly-VLOM 50	Fig 3.10B	- -	- -
1	1	Plunger Valve Assembly-VLOM 50	Fig 3.10A	- -	- -

FIG. 3.9 CYLINDER ASSEMBLY - VLOM 50

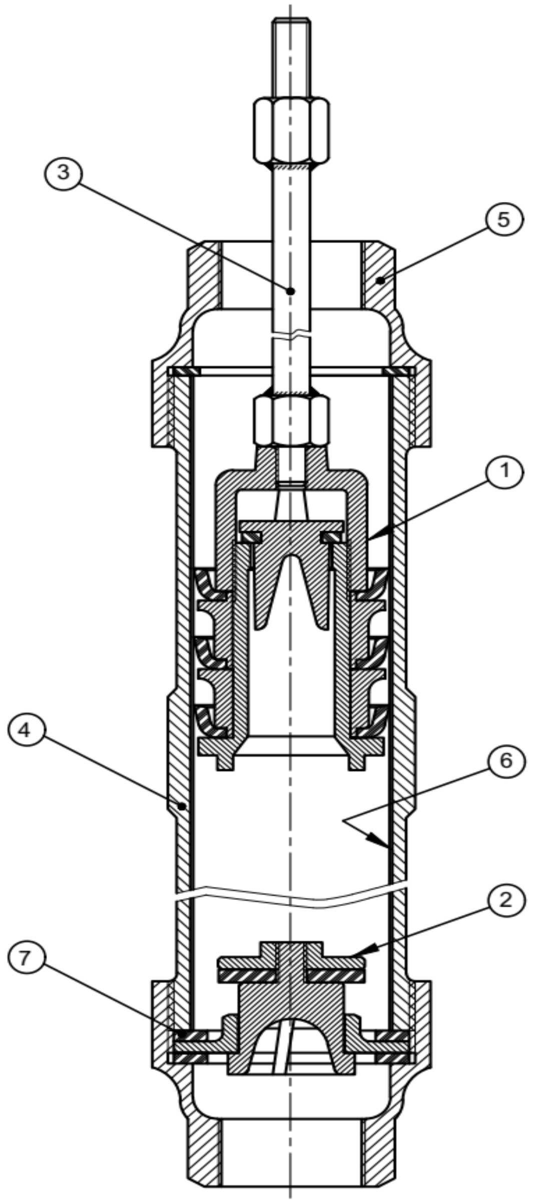


3.10A PLUNGER VALVE ASSEMBLY - VLOM50

3.10B CHECK VALVE ASSEMBLY - VLOM50

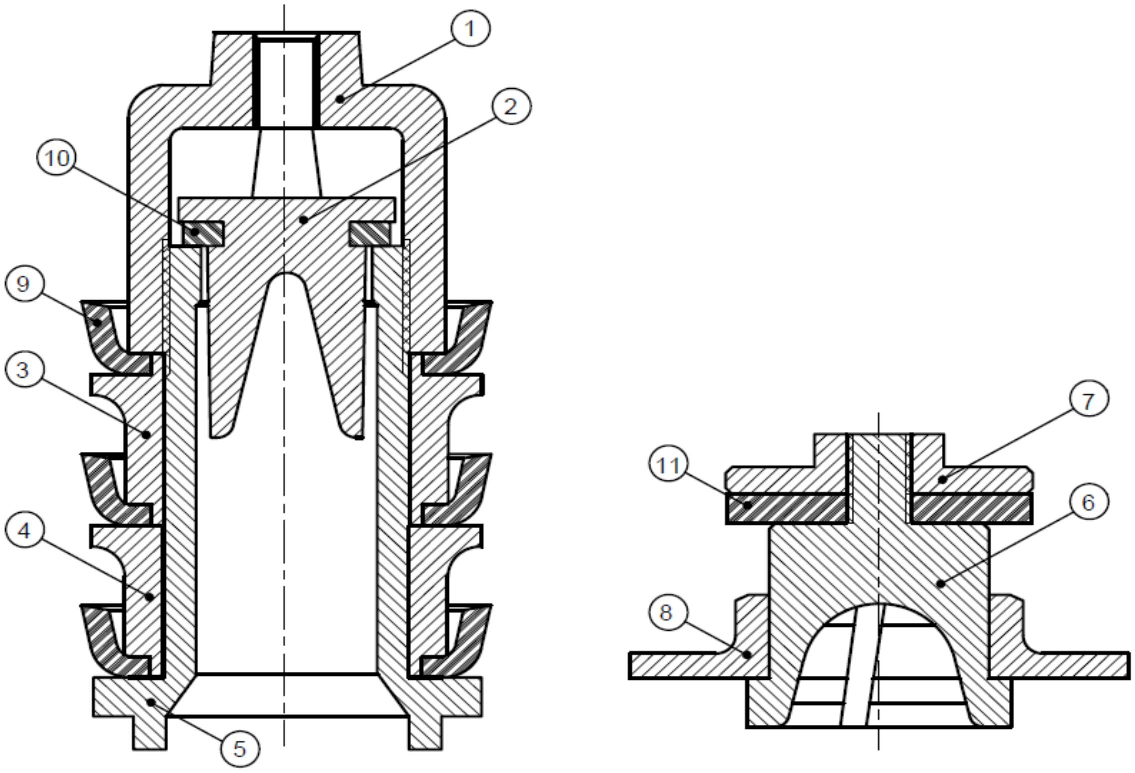
Part No.	No. Off	Description	Reference	Material	
7	1	Hexagonal Bolt-M6 x 25	Std 05	Stainless Steel	Annex B
6	1	Hexagonal Nut-M6	Std 01	Stainless Steel	Annex B
5	1	O-Ring-VLOM 50	Fig 7.11	Nitrile Rubber	5.6 of Part 1
4	2	Bobbin	Fig 7.9	Nitrile Rubber	5.6 of Part 1
3	1	Pump Bucket-VLOM 50	Fig 7.2	Nitrile Rubber	5.6 of Part 1
2	1	Check Valve Body	Fig 6.16	Bronze	Grade LTB2 of IS 318
1	1	Plunger Valve Body	Fig 6.15	Bronze	Grade LTB2 of IS 318

FIG. 3.10 VALVE ASSEMBLIES - VLOM 50



7	3	Sealing Ring-Standard	Fig 7.3	Nitrile Rubber	5.6 of Part 1
6	1	Brass Liner-Long	Fig 6.1B	Brass Tube	CuZn30 As of IS 407
5	2	Reducer Cap	Fig 5.4	Cast Iron	FG 200 of IS 210
4	1	Cylinder Body-Long	Fig 5.2	Cast Iron	FG 200 of IS 210
3	1	Plunger Rod-Long	Fig 4.23	Stainless Steel	04Cr18Ni10 of IS 6603
2	1	Check Valve Assembly-EDWP	Fig 3.12B	- -	- -
1	1	Plunger Valve Assembly-EDWP	Fig 3.12A	- -	- -
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

FIG. 3.11 CYLINDER ASSEMBLY - EDWP



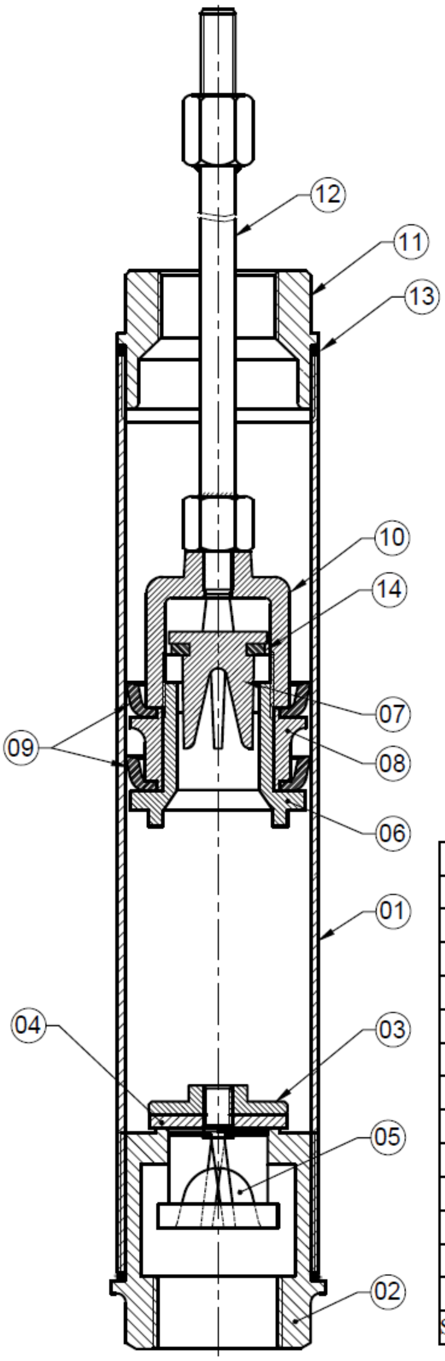
3.12A PLUNGER VALVE ASSEMBLY _EDWP

3.12B CHECK VALVE ASSEMBLY _EDWP

Part No.	No. Off	Description	Reference	Material	
11	1	Lower Valve Seating_Standard	Fig 7.7	Nitrile Rubber	5.6 of Part 1
10	1	Upper Valve Seating	Fig 7.6	Nitrile Rubber	5.6 of Part 1
9	3	Pump Bucket-Standard	Fig 7.1	Nitrile Rubber	5.6 of Part 1
8	1	Check Valve Seat-Standard	Fig 6.13	Bronze	Grade LTB2 of IS 318
7	1	Rubber Seat Retainer	Fig 6.11	Bronze	Grade LTB2 of IS 318
6	1	Check Valve-Standard	Fig 6.9	Bronze	Grade LTB2 of IS 318
5	1	Follower-EDWP	Fig 6.7	Bronze	Grade LTB2 of IS 318
4	1	Bucket Spacer-Lower	Fig 6.5	Bronze	Grade LTB2 of IS 318
3	1	Bucket Spacer-Standard	Fig 6.4	Bronze	Grade LTB2 of IS 318
2	1	Upper Valve	Fig 6.3	Bronze	Grade LTB2 of IS 318
1	1	Plunger Yoke Body	Fig 6.2	Bronze	Grade LTB2 of IS 318

NOTE: Lower valve assembly to be punch locked on top at M10 joint at diametrically opposite two points after filing the two surfaces even.

FIG. 3.12 VALVE ASSEMBLIES-EDWP



14	Upper Valve Seating	1	N. Rubber	Fig 7.6
13	O-Ring Ø50 x Ø4	1	N. Rubber	Fig 7.10
12	Plunger Rod	1	S.S. 304	Fig 4.22
11	Upper Cap	1	S.S. 304	Fig 5.7
10	Plunger Yoke Body	1	S.S. 304	Fig 6.2
09	Rubber Pump Bucket	2	N. Rubber	Fig 7.1
08	Spacer	1	S.S. 304	Fig 6.4
07	Upper Valve	1	S.S. 304	Fig 6.3
06	Follower	1	S.S. 304	Fig 6.6
05	Check Valve	1	S.S. 304	Fig 6.9
04	Lower Valve Seating	1	N. Rubber	Fig 7.7
03	Rubber Seat Retainer	1	S.S. 304	Fig 6.11
02	Lower Cap	1	S.S. 304	Fig 3.14
01	Cylinder Body	1	S.S. 304	Fig 3.14
SL. No	DESCRIPTION	QTY	MATERIAL	REFERENCE

FIG. 3.13 CYLINER ASSEMBLY (S.S CYLINER SDWP AND FLP ALTERNATE DESIGN)

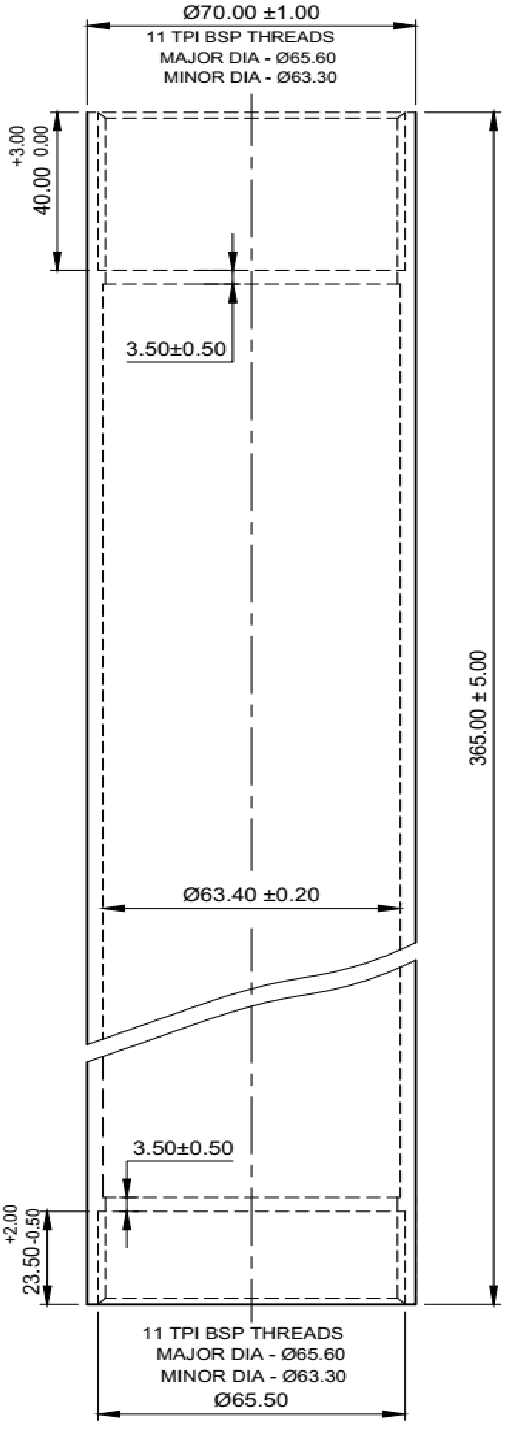


FIG. 3.14 S.S CYLINER ASSEMBLY - ALTERNATE DESIGN FOR MARK-II OR FLP

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 4 STEEL COMPONENTS

1 SCOPE

1.1 This Indian Standard (Part 4) specifies the requirements of all steel and stainless steel components used in the assembly of each type of handpump (SDWP, VLOM-65, VLOM-50, EDWP & FLP) covered in this standard.

1.2 This part shall be read with Part 1, Stipulations provided therein, whichever relevant to the components covered in this part, shall apply.

2 CONSTRUCTION

2.1 The constructional details of different components covered in this part shall be as given in Fig. **4.1** to **4.35**.

2.2 The material and dimensions shall meet the related prerequisites given in **4** and **5** of Part 1.

2.3 The steel components shall be given anti-corrosive treatment as mentioned in **6** of Part 1.

2.4 Stainless Steel top connecting rod shall be as given in Fig. **4.21B**

3 TESTING

3.1 Group of each type of component covered in this part shall be treated as a separate lot.

3.2 Test samples shall be drawn as per procedure described in **9.3** of Part 1.

3.3 The critical dimensions of all the components selected as per **3.2** shall be checked for conformance with the relevant figures given in this part.

3.4 The flanges shall be reasonably flat to provide proper matching of the holes to ensure unrestricted insertion of the bolts when assembled with counterpart.

3.5 The connecting rods/plunger rods shall be examined for straightness and formation of threads.

3.6 Criteria for Conformity

3.6.1 The individual lot of components, as defined in **3.1**, shall be considered conforming to the requirements of the standard, if the batch for the particular lot selected according to **3.2** satisfies the requirements given in **3.6.2**.

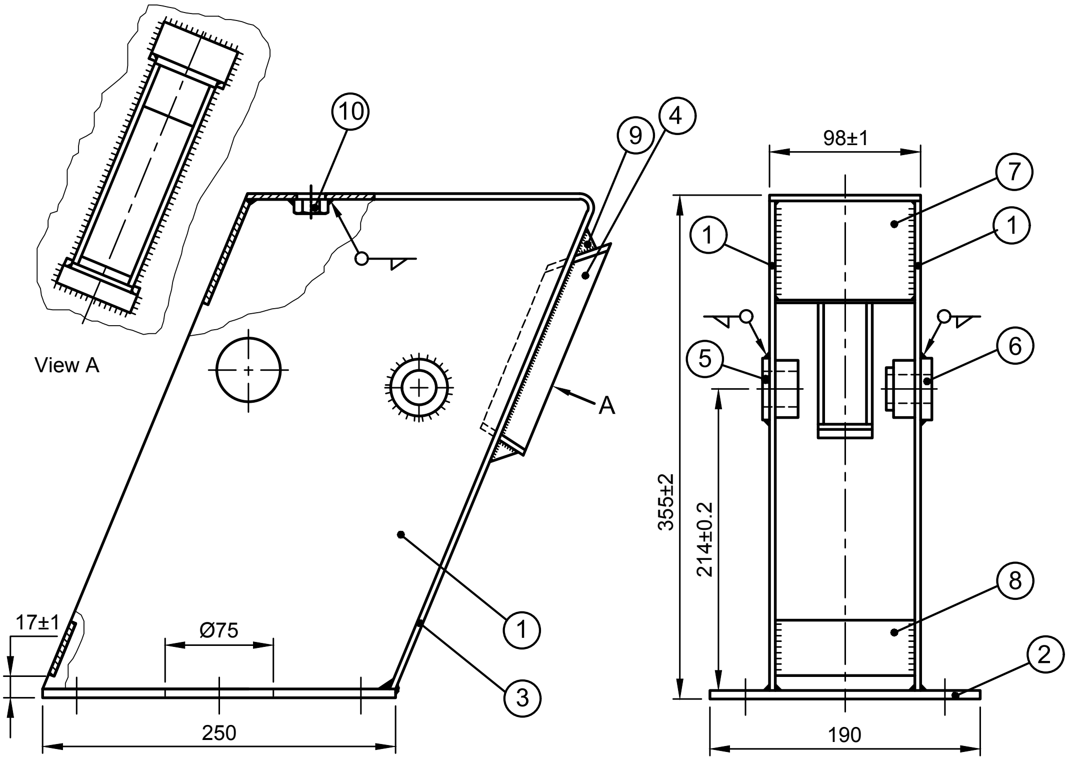
3.6.2 The number of components not meeting the requirements of a characteristic inspected under **3.3** to **3.5** (whichever applicable) shall not exceed the corresponding acceptance number as specified in IS 2500 (Part 1).

4 MARKING

The requirements given in **11.5.1** and **11.5.2** of Part 1 shall be followed.

5 PACKING

The requirements of **12.1** and **12.2** of Part 1 shall apply.



10	1	Hexagonal Nut - M12	Std 04	Steel	Annex B
9	2	Gusset - Standard	Fig 4.3K	Mild Steel	Quality A of Grade E 250 of IS 2062
8	1	Front Bottom End Plate	Fig 4.3J	Mild Steel	Quality A of Grade E 250 of IS 2062
7	1	Front Top End Plate	Fig 4.3I	Mild Steel	Quality A of Grade E 250 of IS 2062
6	1	Axle Bush - Left	Fig 4.3H	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Axle Bush - Right	Fig 4.3G	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Bracket - Standard	Fig 4.3D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Back Plate - Standard	Fig 4.3C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Head Flange	Fig 4.3B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	2	Side Plate	Fig 4.3A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

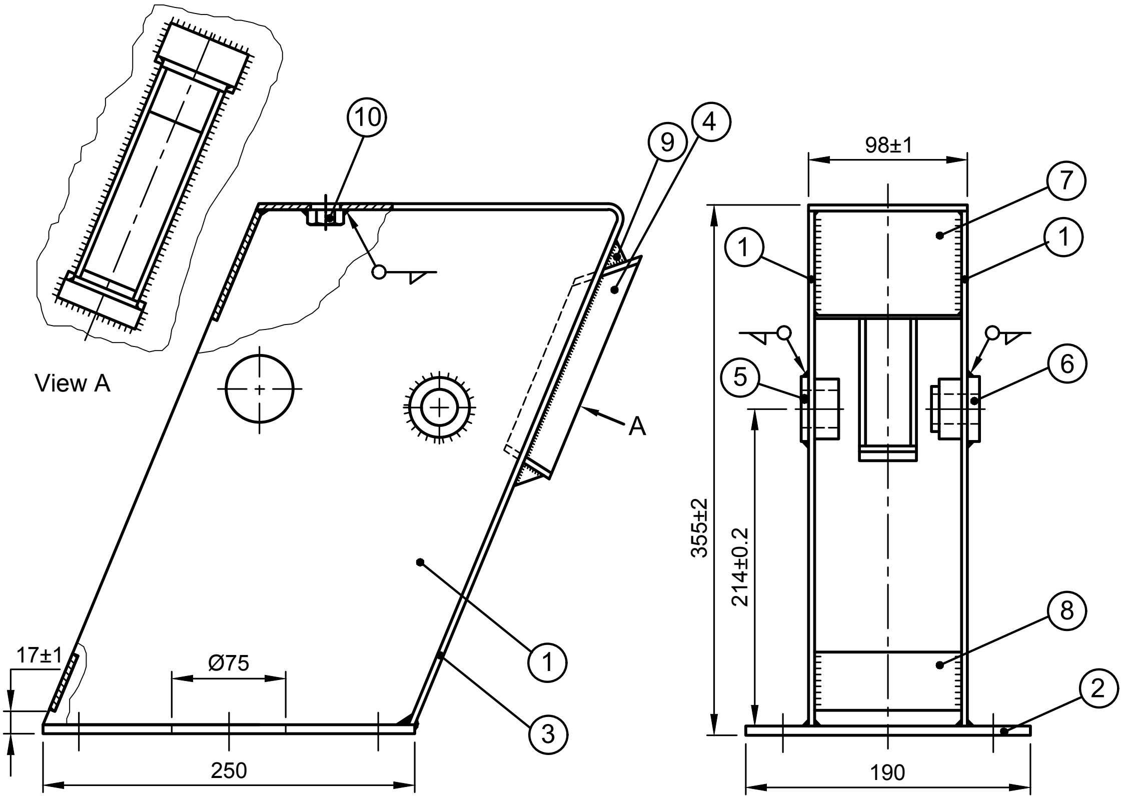
NOTES:

1. Inside fillet welding of side plates and back plate to flange should be 3.2 mm, Min.
2. Welding fillet in other places should be 4 mm, Min.
3. The side plate shall be welded inside and outside as shown in the drawing.
4. The head assembly shall be welded from inside and outside. The out side seal welding run shall be ground smooth.
5. Reaming of the left and right axle bushes shall be done to ensure internal dimensions and alignment.

Manufacturing tolerance to be ±0.5 unless otherwise specified.

All dimensions in millimetres

FIG. 4.1 HEAD - STANDARD
(FOR SDWP, VLOM-65, VLOM-50 AND FLP)



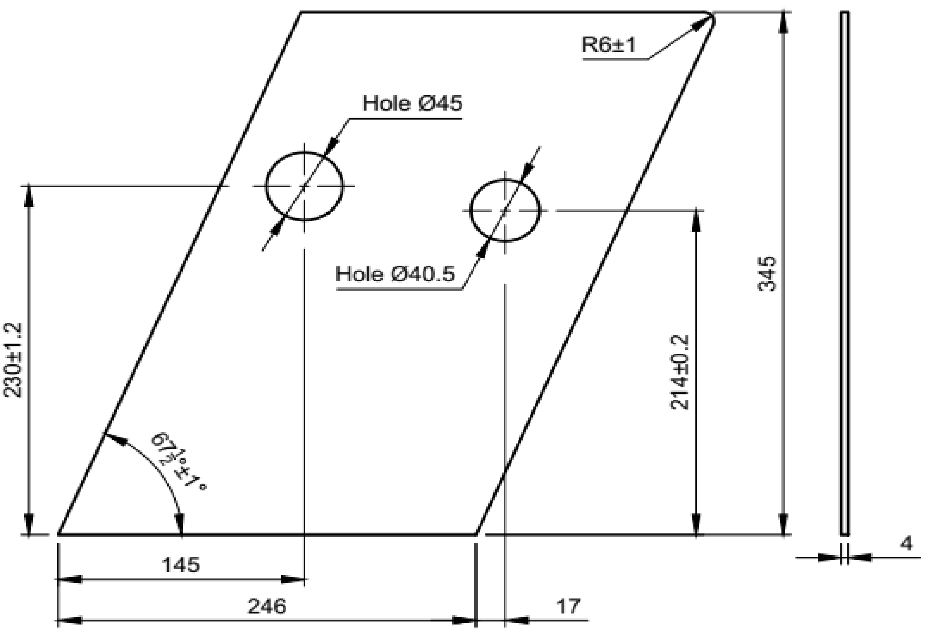
10	1	Hexagonal Nut - M12	Std 04	Steel	Annex B
9	2	Gusset - EDWP	Fig 4.3L	Mild Steel	Quality A of Grade E 250 of IS 2062
8	1	Front Bottom End Plate	Fig 4.3J	Mild Steel	Quality A of Grade E 250 of IS 2062
7	1	Front Top End Plate	Fig 4.3I	Mild Steel	Quality A of Grade E 250 of IS 2062
6	1	Axle Bush - Left	Fig 4.3H	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Axle Bush - Right	Fig 4.3G	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Bracket - EDWP	Fig 4.3F	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Back Plate - EDWP	Fig 4.3E	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Head Flange	Fig 4.3B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	2	Side Plate	Fig 4.3A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTES:
1. Inside fillet welding of side plates and back plate to flange should be 3.2 mm, Min.
2. Welding fillet in other places should be 4 mm, Min.
3. The side plate shall be welded inside and outside as shown in the drawing.
4. The head assembly shall be welded from inside and outside. The out side seal welding run shall be ground smooth.
5. Reaming of the left and right axle bushes shall be done to ensure internal dimensions and alignment.

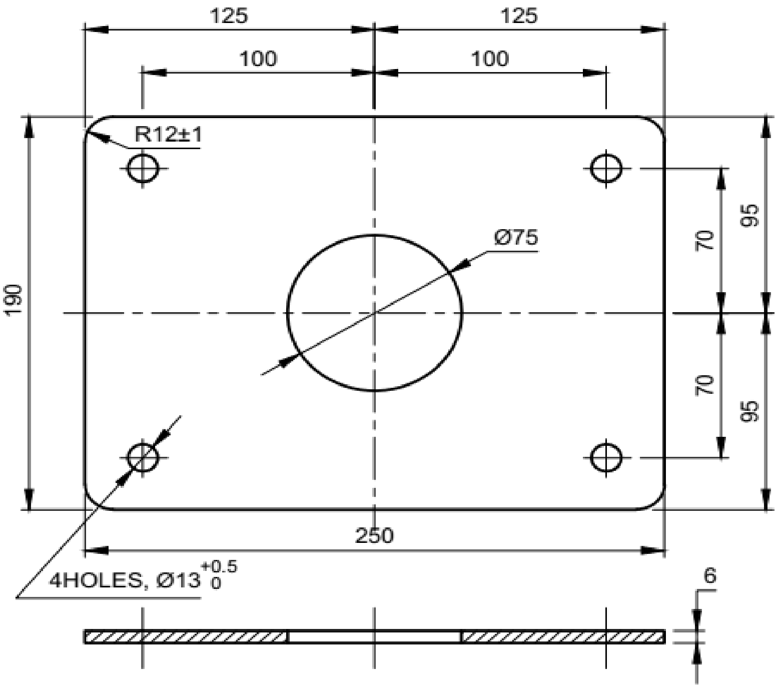
Manufacturing tolerance to be ±0.5 unless otherwise specified.

All dimensions in millimetres

FIG. 4.2 HEAD - EDWP



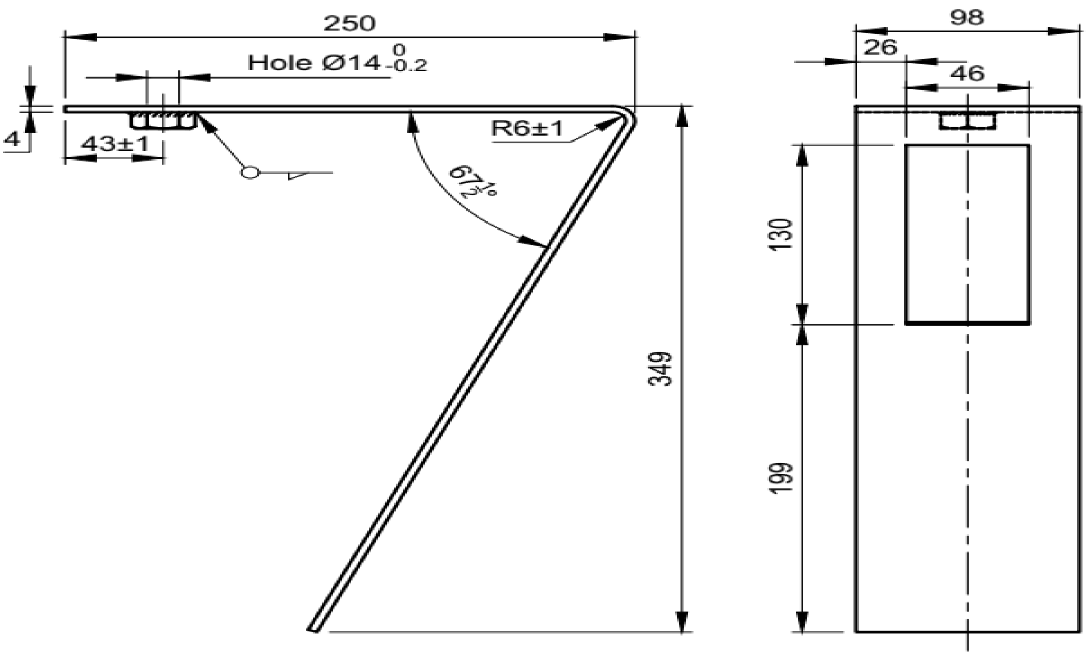
4.3A SIDE PLATE



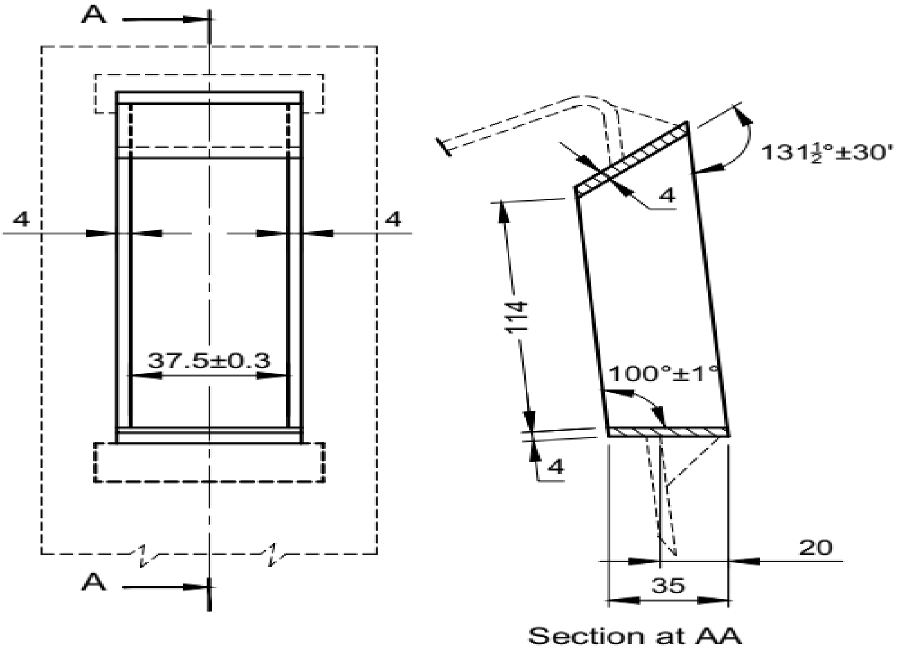
4.3B HEAD FLANGE

Manufacturing tolerance to be ±0.5 unless otherwise specified
All dimensions in millimetres

FIG. 4.3 PARTS OF HEAD (*Continued*)



4.3C BACK PLATE _STANDARD
(For SDWP, VLOM 65, VLOM 50 AND FLP)

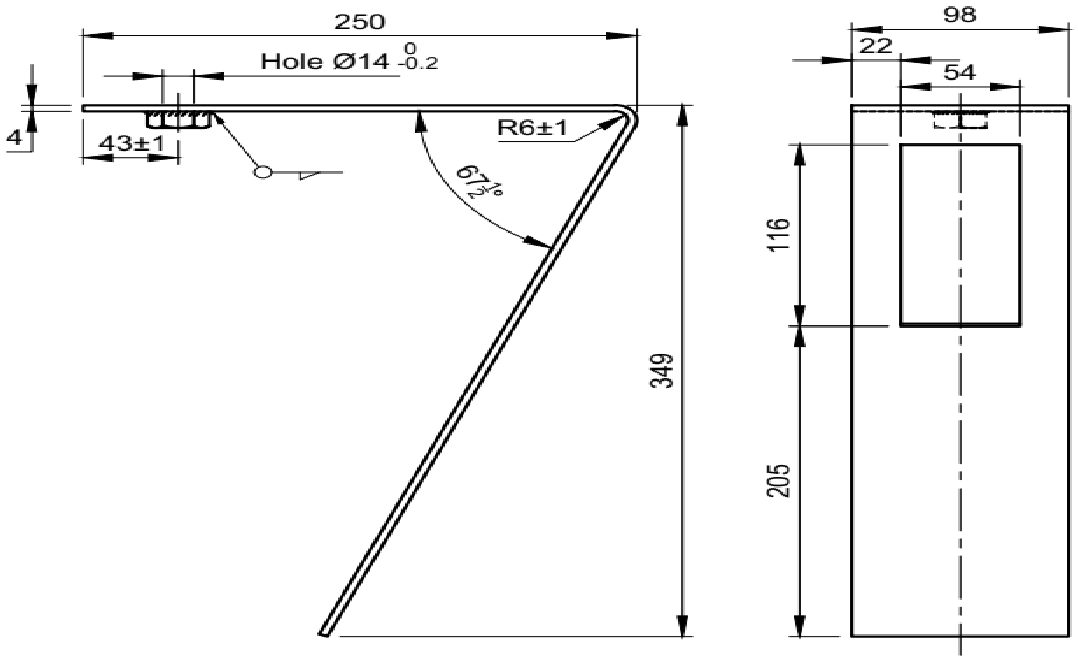


4.3D BRACKET _STANDARD
(For SDWP, VLOM 65, VLOM 50 and FLP)

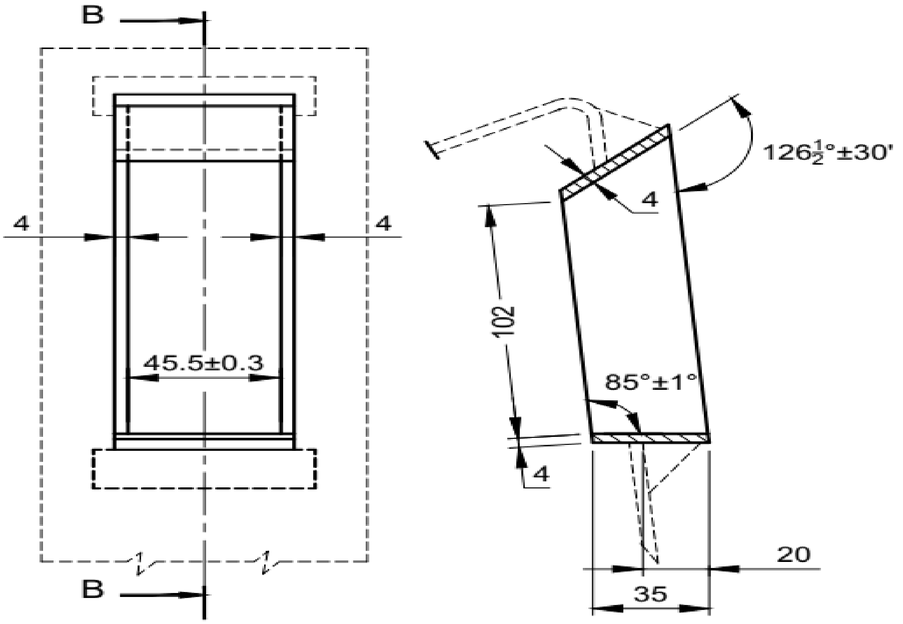
Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

FIG. 4.3 PARTS OF HEAD (*Continued*)



4.3E BACK PLATE _EDWP



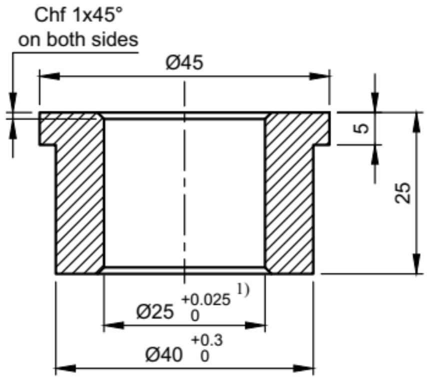
Section at BB

4.3F BRACKET _EDWP

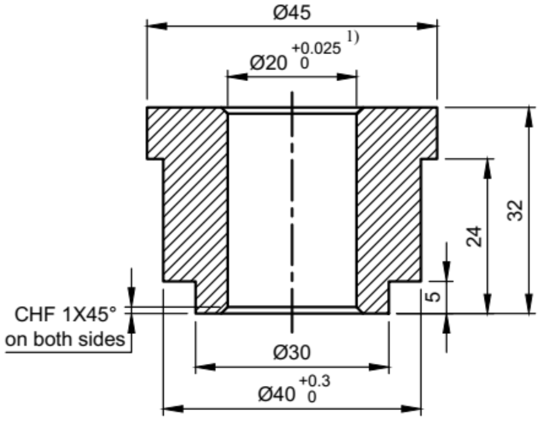
Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

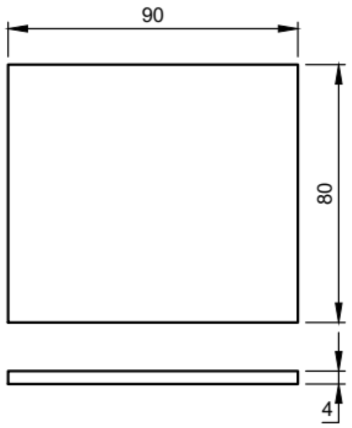
FIG. 4.3 PARTS OF HEAD (*Continued*)



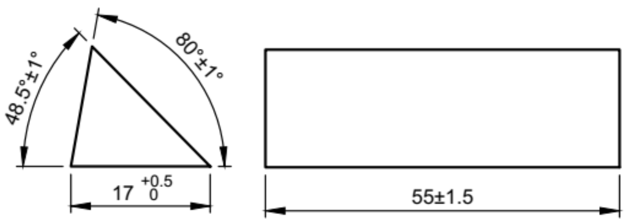
4.3G AXLE BUSH -RIGHT



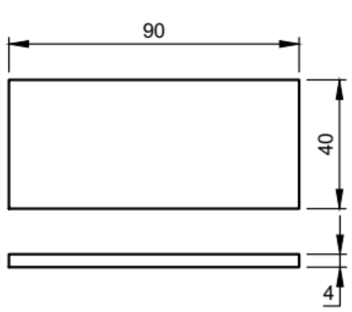
4.3H AXLE BUSH -LEFT



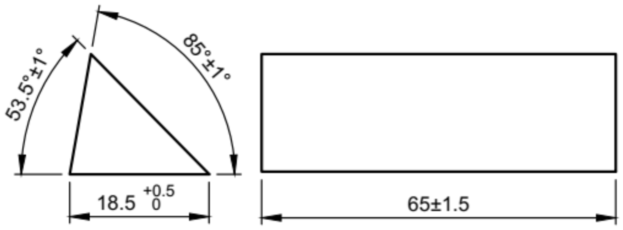
4.3 I FRONT TOP END PLATE



4.3K GUSSET - STANDARD
(For SDWP, VLOM 65, VLOM 50 and FLP)



4.3J FRONT BOTTOM END PLATE

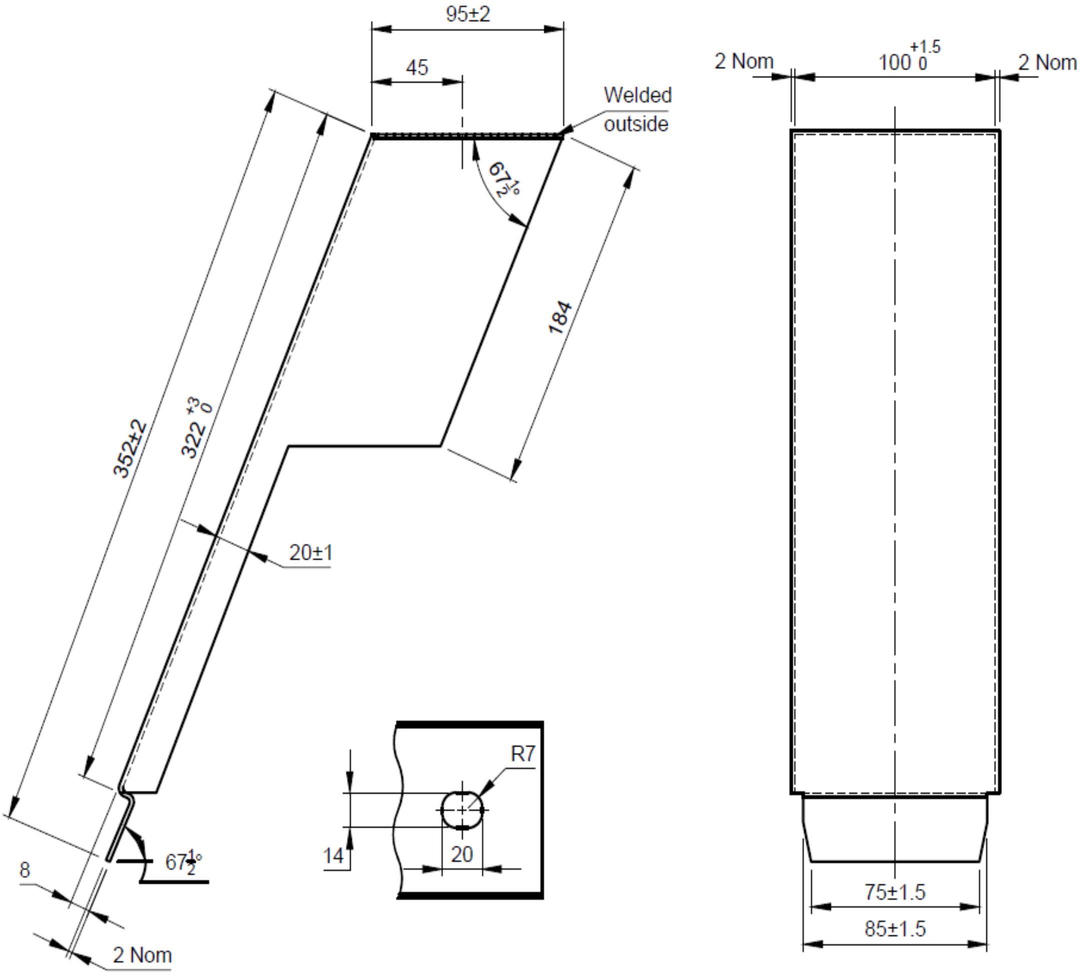


4.3L GUSSET - EDWP
(For EDWP)

1) Indicates critical dimensions.
Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

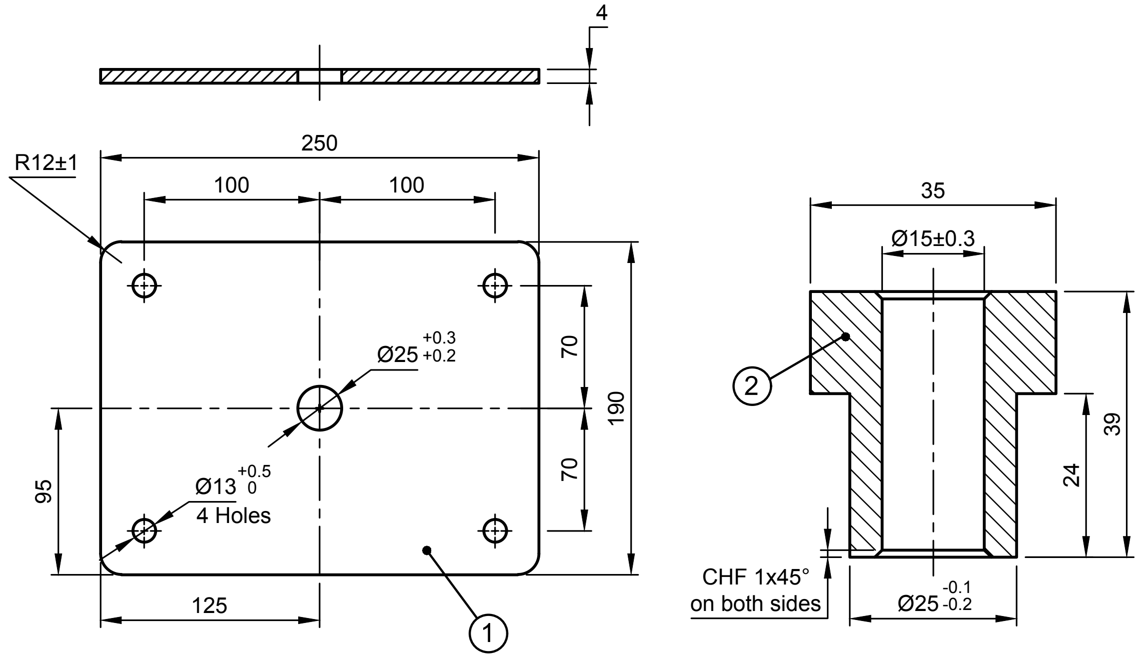
FIG. 4.3 PARTS OF HEAD (*Continued*)



Manufacturing tolerance to be ±0.5 unless otherwise specified.

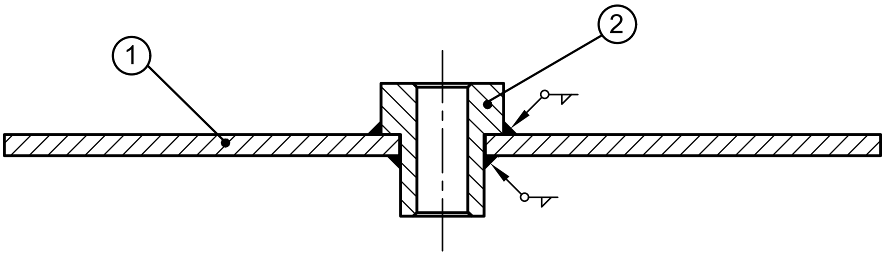
All dimensions in millimetres

FIG. 4.4 FRONT COVER



4.5A FLANGE FOR THIRD PLATE

4.5B GUIDE BUSH

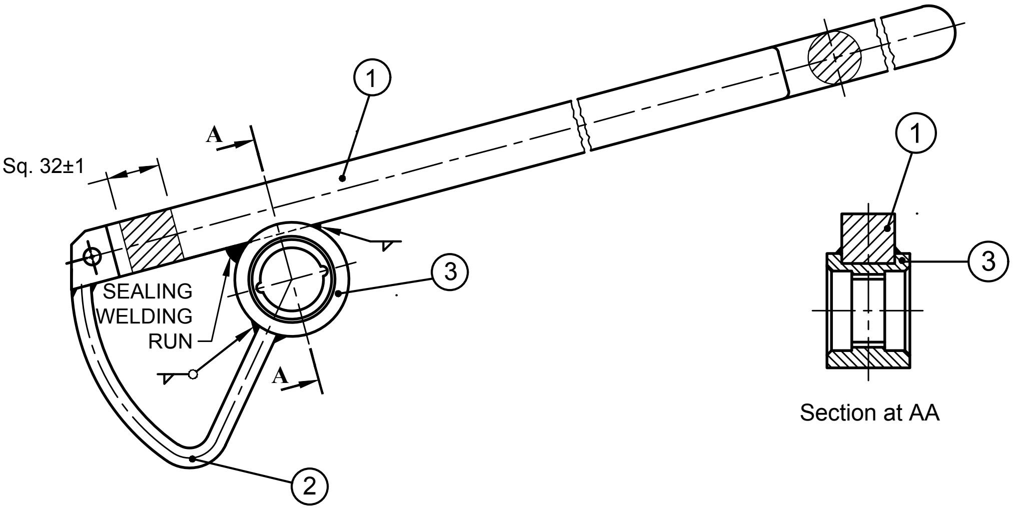


Part No.	No. Off	Description	Reference	Material	
2	1	Guide Bush	Fig 4.5B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Flange for Third Plate	Fig 4.5A	Mild Steel	Quality A of Grade E 250 of IS 2062

Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

FIG. 4.5 THIRD PLATE

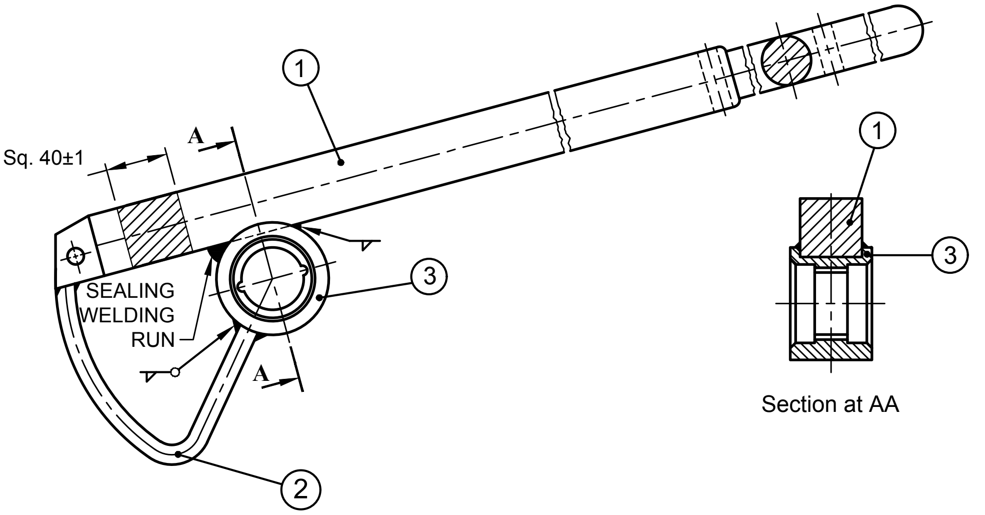


3 2 1	1 1 1	Bearing Housing Chain Guide Handle Bar _Standard	Fig 4.8D Fig 4.8C Fig 4.8A	Mild Steel Mild Steel Mild Steel	Quality A of Grade E 250 of IS 2062 Quality A of Grade E 250 of IS 2062 Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: Welding fillet shall not be less than 6mm at all places.

All dimensions in millimetres

FIG. 4.6 HANDLE-STANDARD
(FOR SDWP, VLOM 65, VLOM 50 and FLP)

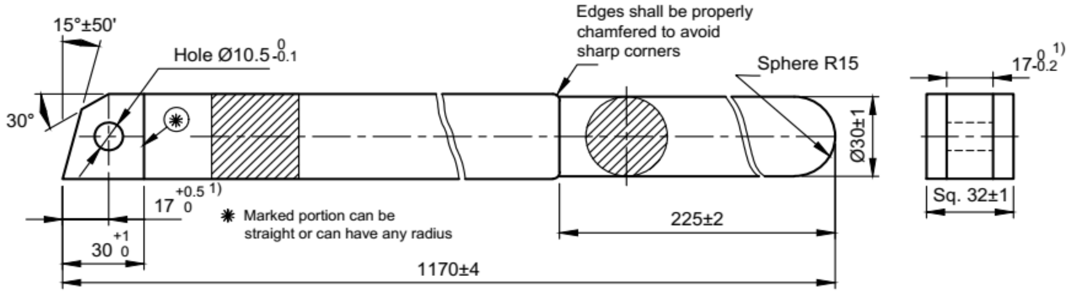


3 2 1	1 1 1	Bearing Housing Chain Guide Handle Bar _EDWP	Fig 4.8D Fig 4.8C Fig 4.8B	Mild Steel Mild Steel Mild Steel	Quality A of Grade E 250 of IS 2062 Quality A of Grade E 250 of IS 2062 Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: Welding fillet shall not be less than 6mm at all places.

All dimensions in millimetres

FIG. 4.7 HANDLE-EDWP


15°±50'
Hole Ø10.5 0 -0.1
30°
Edges shall be properly chamfered to avoid sharp corners
Sphere R15
17 0 -0.2 1)
Ø30±1
Sq. 32±1
17 +0.5 0 1)
✱ Marked portion can be straight or can have any radius
30 +1 0
225±2
1170±4

4.8A HANDLE BAR -STANDARD
(For SDWP, VLOM 65, VLOM 50 and FLP)

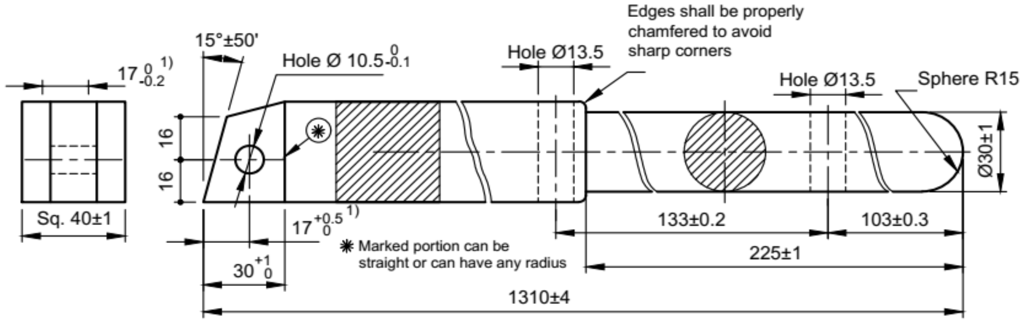
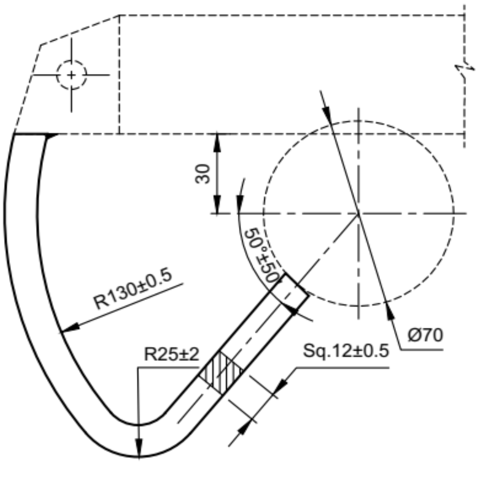
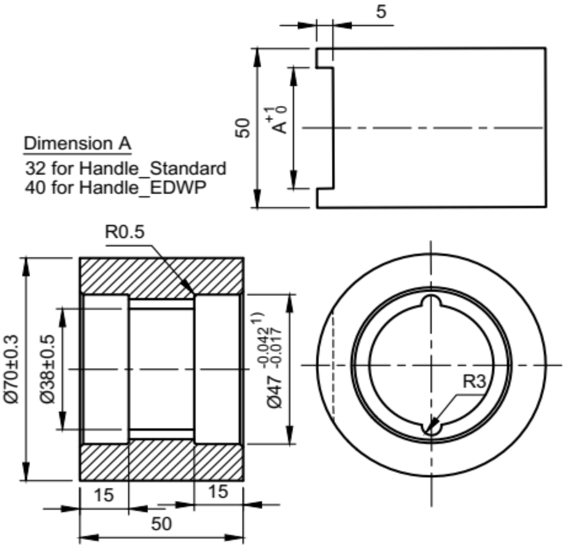


FIG. 4.8B HANDLE BAR-EDWP



4.8C CHAIN GUIDE



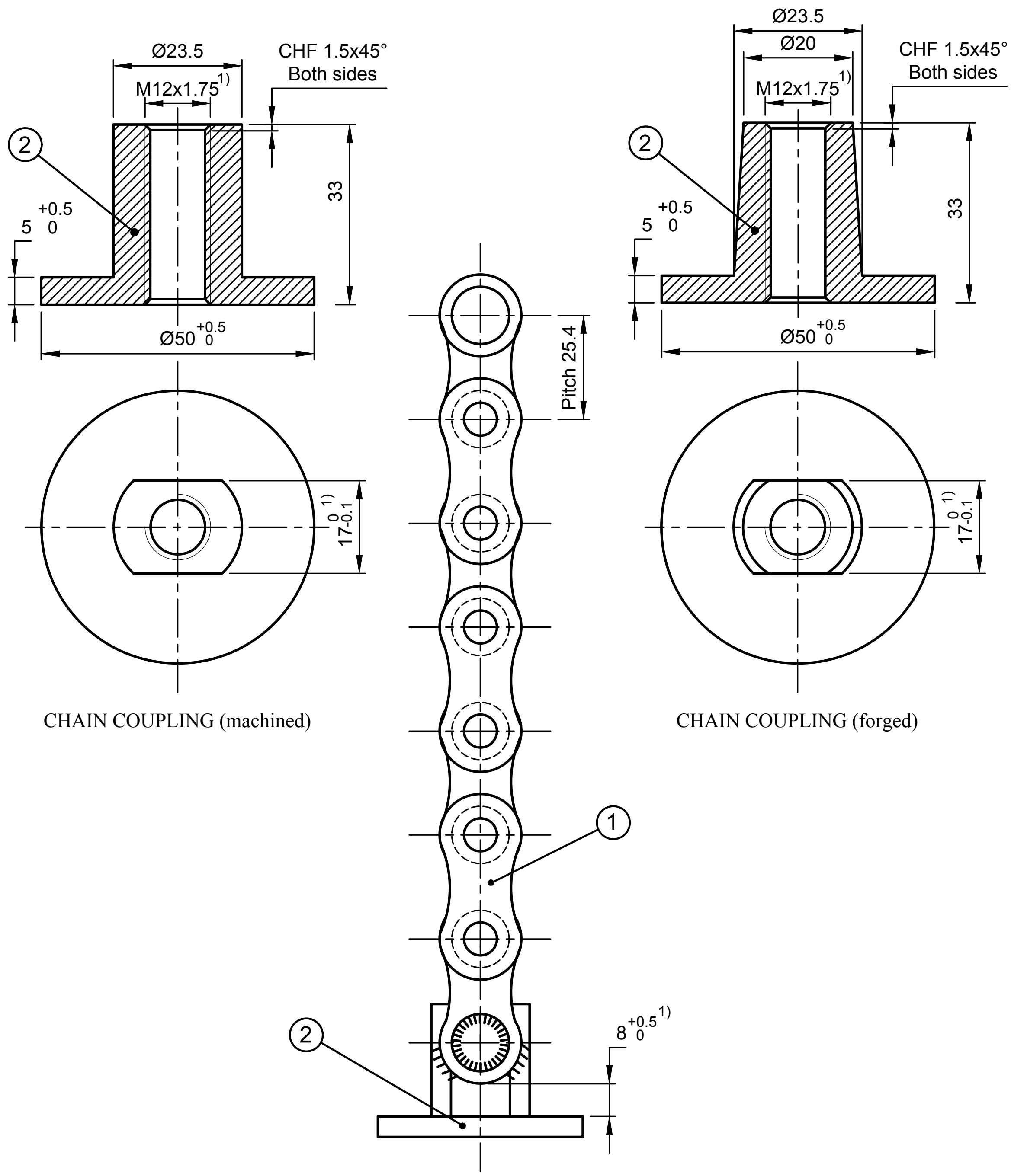
Manufacturing tolerance to be ±0.1 unless otherwise specified

4.8D BEARING HOUSING

1) Indicates critical dimensions.

All dimensions in millimetres

FIG. 4.8 PARTS OF HANDLE



CHAIN COUPLING (machined)

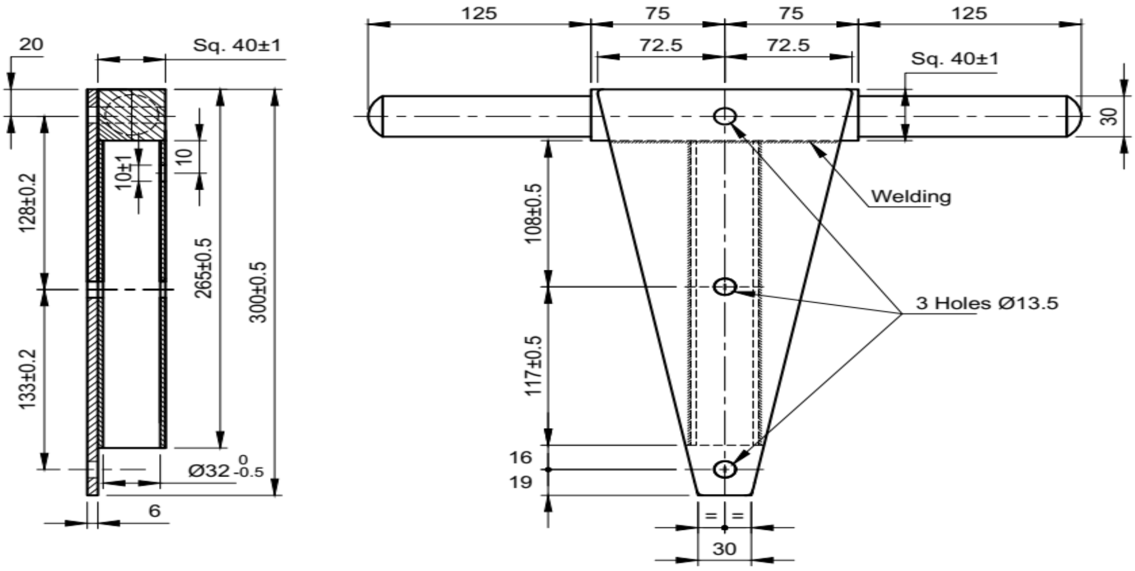
CHAIN COUPLING (forged)

2	1	Chain Coupling	- -	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Roller Chain, 25.4 Pitch	Std 16	- -	Annex B
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

1) Indicates critical dimensions

All dimensions in millimetres

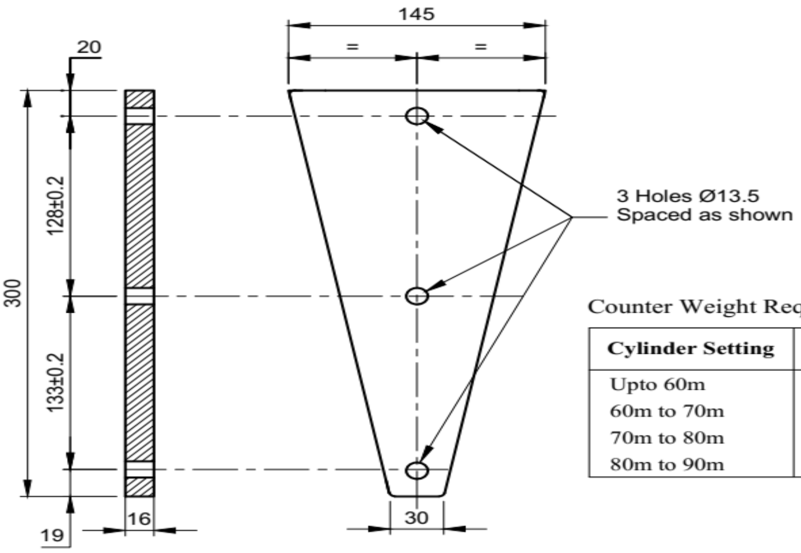
Fig. 4.9 Chain with Coupling



Manufacturing tolerance to be ±0.5 unless otherwise specified.

All dimensions in millimetres

FIG. 4.10 T-BAR
(FOR EDWP only)



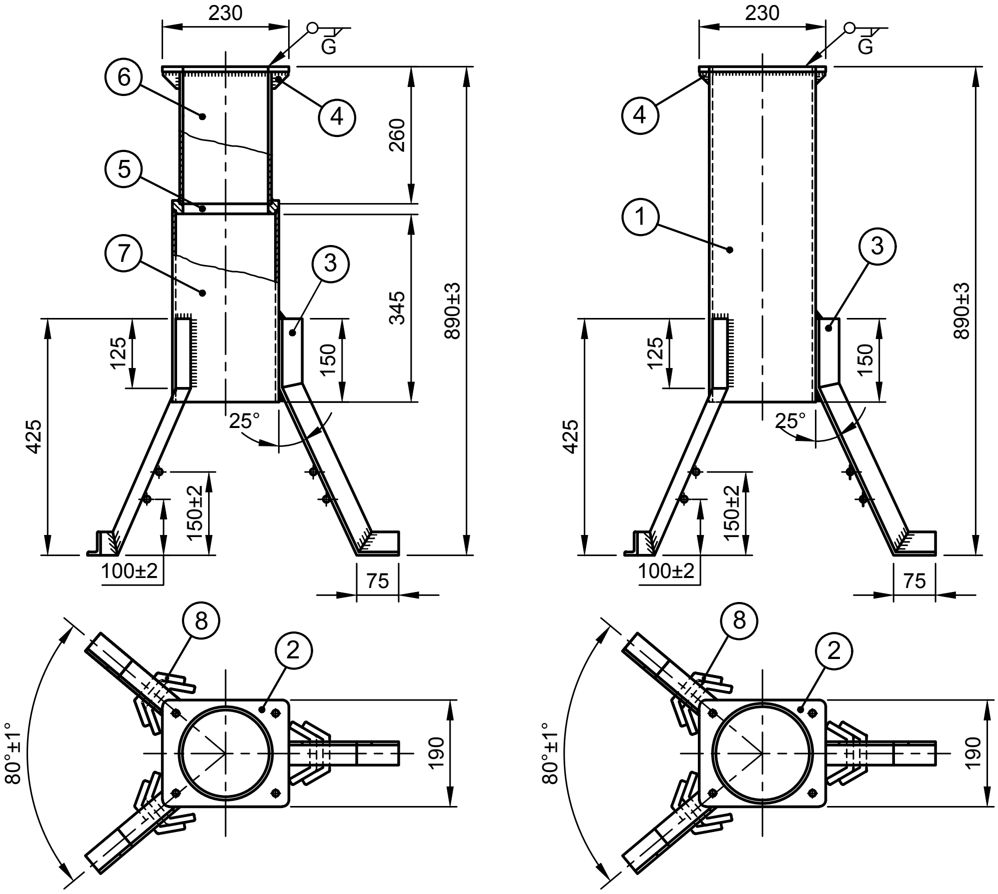
Counter Weight Requirement

Cylinder Setting	No. of Weights
Upto 60m	None
60m to 70m	One
70m to 80m	Two
80m to 90m	Three

Manufacturing tolerance to be ±0.5 unless otherwise specified.

All dimensions in millimetres.

FIG. 4.11 COUNTER WEIGHT (FOR EDWP only)



4.12A TELESCOPIC STAND-STANDARD
(For borewell with 150 NB casing pipe)

4.12B NORMAL STAND-STANDARD
(For borewell with 100/125 NB casing pipe)

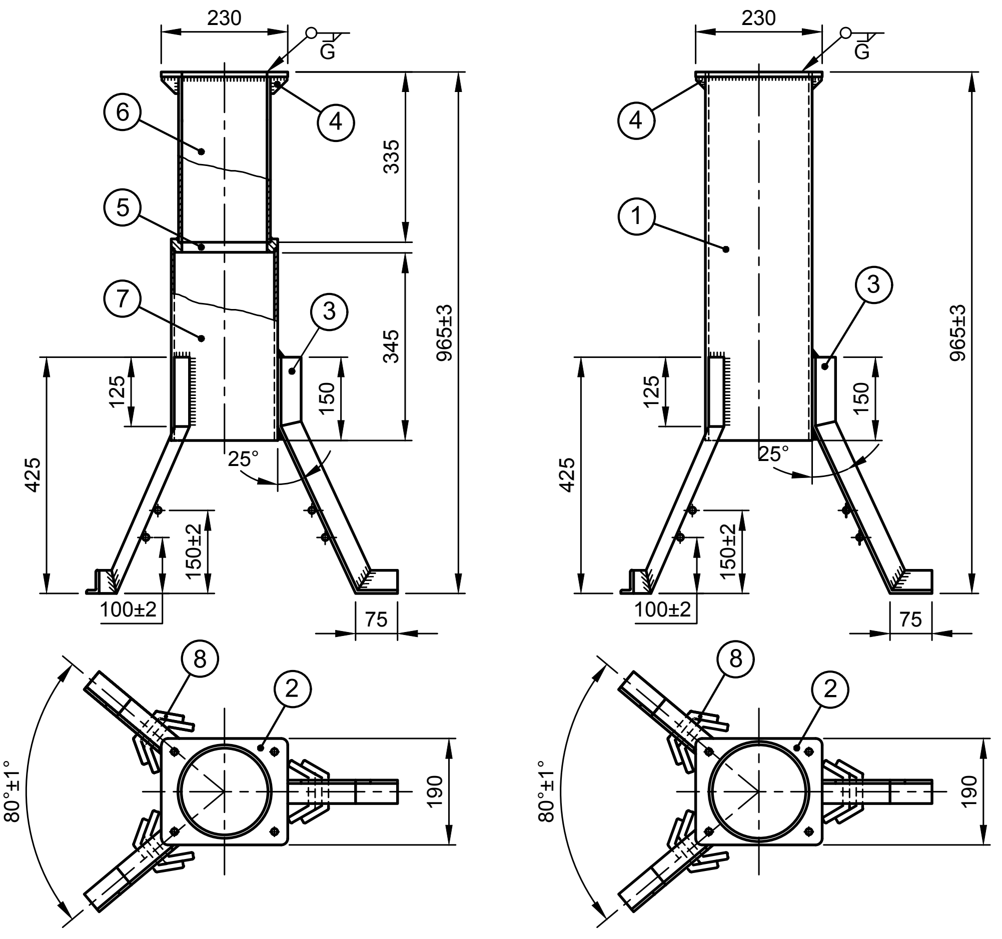
8	6	Spikes	Fig 4.14G	Mild Steel / Bright Bar	Quality A of Grade E 250 of IS 2062/ 5.1.2 of part 1
7	1	Bottom Pipe - 175 NB	- -	Steel Tube	IS 1161- medium (see note)
6	1	Top Pipe - 150 NB	- -	Mild Steel Tube	IS 1239 (Part 1) - medium
5	1	Reducer Coller	Fig 4.14F	Mild Steel	Quality A of Grade E 250 of IS 2062
4	2	Gusset	Fig 4.14E	Mild Steel	Quality A of Grade E 250 of IS 2062
3	3	Leg	Fig 4.14D	HR Section	IS 808
2	1	Stand Flange	Fig 4.14C	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Stand Pipe - Standard	Fig 4.14A	Mild Steel Tube	IS 1239 (Part 1) - medium
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: In case of non availability, 175 NB pipe may be rolled and welded from 4mm sheet conforming to Quality A of Grade E 250 of IS 2062 keeping other dimensions as per IS 1161.

Manufacturing tolerance to be ±0.5 unless otherwise specified.

All dimensions in millimetres

FIG. 4.12 STAND-STANDARD
(FOR SDWP, VLOM 65, VLOM 50, and FLP)



4.13A TELESCOPIC STAND-EDWP

[For borewell with 150 NB casing pipe]

4.13B NORMAL STAND-EDWP

[For borewell with 100/125 NB casing pipe]

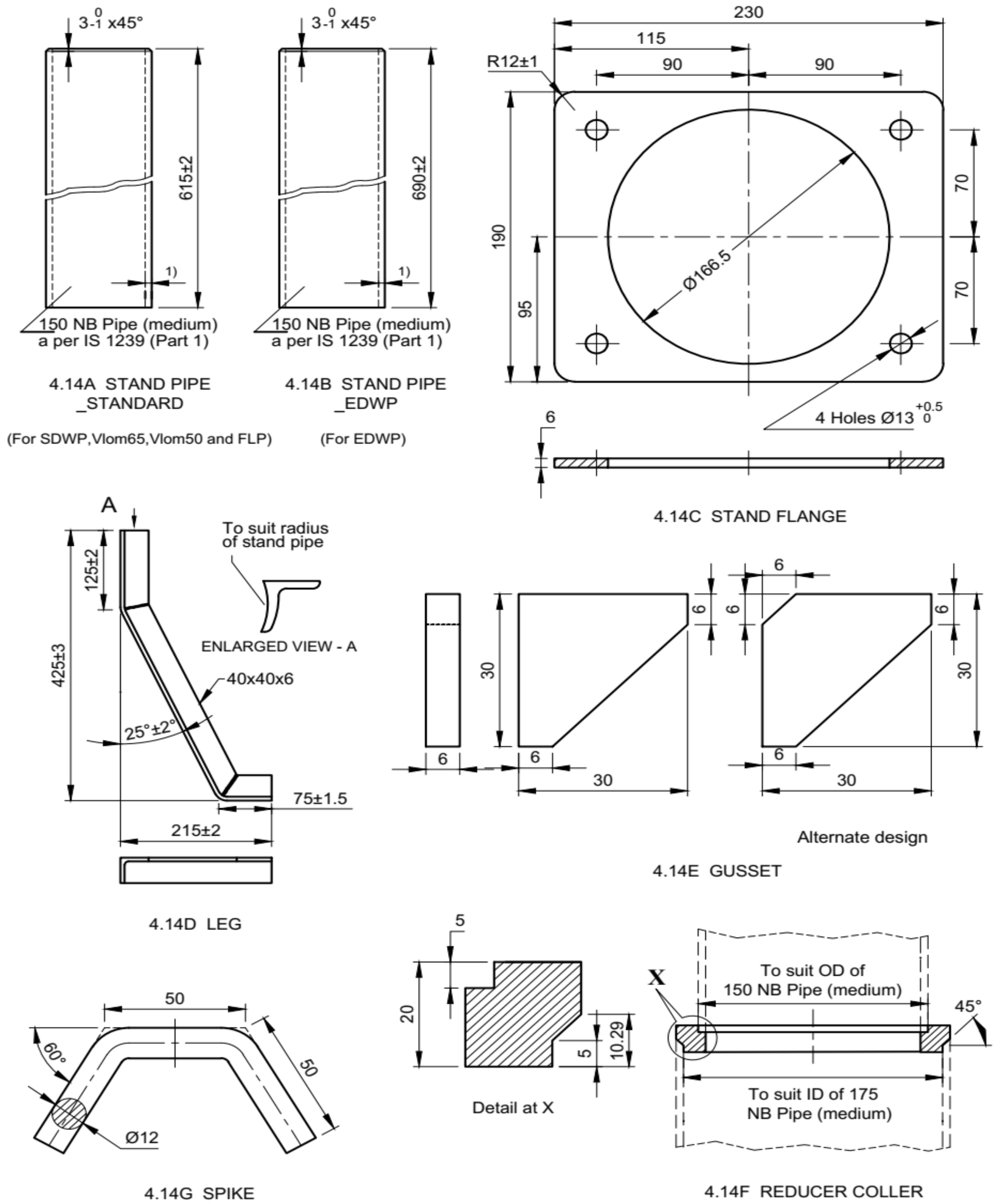
8	6	Spikes	Fig 4.14G	Mild Steel / Bright Bar	Quality A of Grade E 250 of IS 2062 5.1.2 of part 1
7	1	Bottom Pipe-175 NB	- -	Steel Tube	IS 1161- medium (see note)
6	1	Top Pipe-150 NB	- -	Mild Steel Tube	IS 1239 (Part 1) - medium
5	1	Reducer Coller	Fig 4.14F	Mild Steel	Quality A of Grade E 250 of IS 2062
4	2	Gusset	Fig 4.14E	Mild Steel	Quality A of Grade E 250 of IS 2062
3	3	Leg	Fig 4.14D	HR Section	IS 808
2	1	Stand Flange	Fig 4.14C	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Stand Pipe- Standard	Fig 4.14B	Mild Steel Tube	IS 1239 (Part 1) - medium
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: In case of non availability, 175 NB pipe may be rolled and welded from 4mm sheet conforming to Quality A of Grade E 250 of IS 2062 keeping other dimensions as per IS 1161.

Manufacturing tolerance to be ±0.5 unless otherwise specified.

All dimensions in millimetres

FIG. 4.13 STAND-EDWP

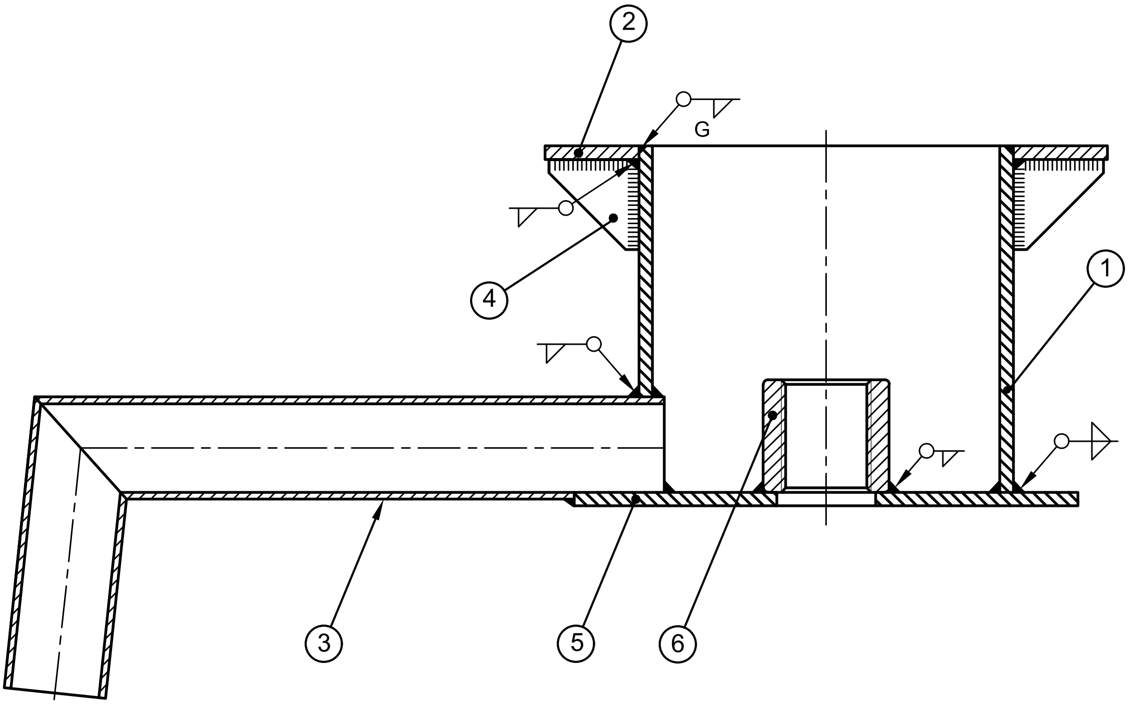


1) indicates critical dimensions

Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

FIG. 4.14 PARTS OF STAND

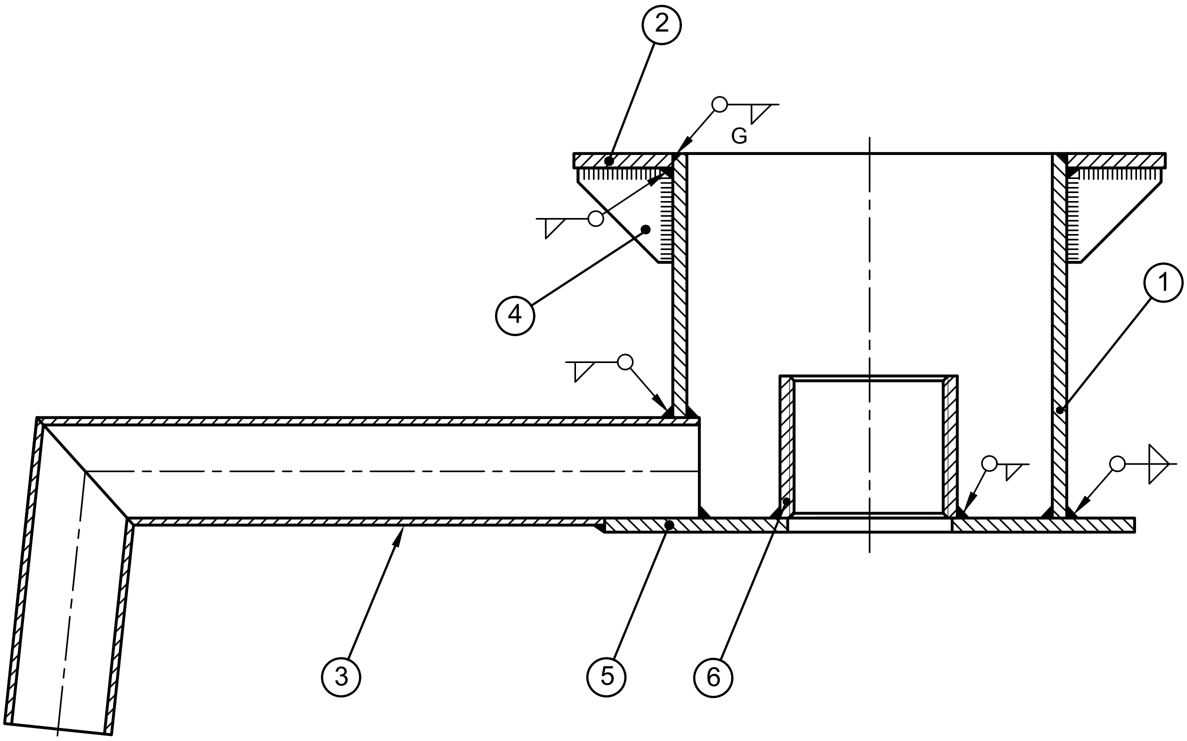


6	1	Riser Pipe Holder _32	Fig 4.18F	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Tank Bottom Flange _32	Fig 4.18E	HR Section	Quality A of Grade E 250 of IS 2062
4	2	Gusset	Fig 4.18D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Spout	Fig 4.18C	MS Tube 40NB	Medium,IS 1239 (Part 1)
2	1	Tank Top Flange	Fig 4.18B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Tank Pipe	Fig 4.18A	MS Tube 150NB	Medium,IS 1239 (Part 1)
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTES:

1. Fillet size of weld at all places shall be 5 mm minimum, excepting spout where it shall not be less than 4 mm. The inside welding of the tank pipe shall be given a sealing run.
2. One side of the coupling to be faced.
3. Sealing run on the top flange to be ground smooth.
4. Verticality of the riser pipe holder to be ensured during fabrication.

FIG. 4.15 WATER TANK – 32
(FOR SDWP & EDWP)

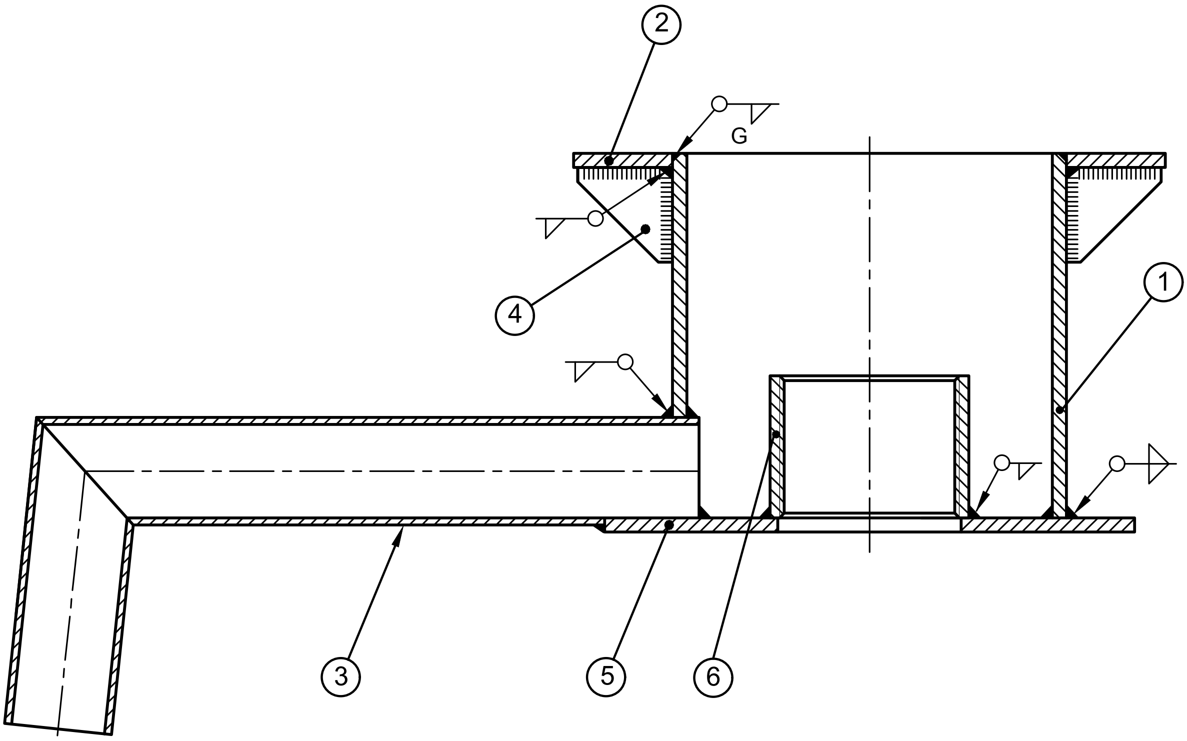


Part No.	No. Off	Description	Reference	Material	
6	1	Riser Pipe Holder - 50	Fig 4.18H	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Tank Bottom Flange - 50	Fig 4.18G	HR Section	Quality A of Grade E 250 of IS 2062
4	2	Gusset	Fig 4.18D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Spout	Fig 4.18C	MS Tube 40NB	Medium,IS 1239 (Part 1)
2	1	Tank Top Flange	Fig 4.18B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Tank Pipe	Fig 4.18A	MS Tube 150NB	Medium,IS 1239 (Part 1)

NOTES:

1. Fillet size of weld at all places shall be 5 mm minimum, excepting spout where it shall not be less than 4 mm. The inside welding of the tank pipe shall be given a sealing run.
2. One side of the coupling to be faced.
3. Sealing run on the top flange to be ground smooth.
4. Verticality of the riser pipe holder to be ensured during fabrication.

FIG. 4.16 WATER TANK – 50

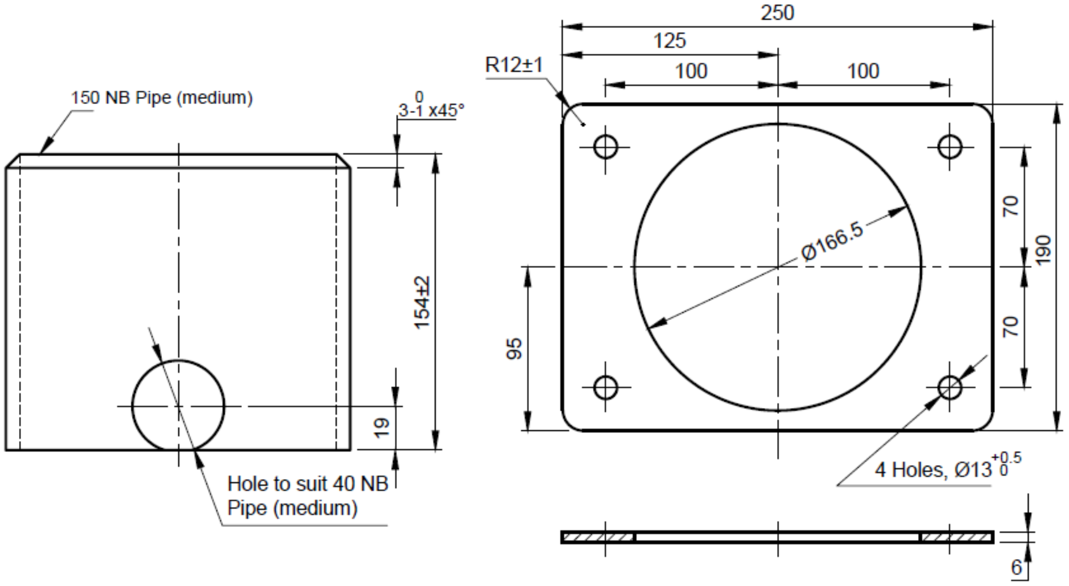


Part No.	No. Off	Description	Reference	Material	
6	1	Riser Pipe Holder - 65	Fig 4.18J	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Tank Bottom Flange - 65	Fig 4.18I	HR Section	Quality A of Grade E 250 of IS 2062
4	2	Gusset	Fig 4.18D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Spout	Fig 4.18C	MS Tube 40NB	Medium,IS 1239 (Part 1)
2	1	Tank Top Flange	Fig 4.18B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Tank Pipe	Fig 4.18A	MS Tube 150NB	Medium,IS 1239 (Part 1)

NOTES:

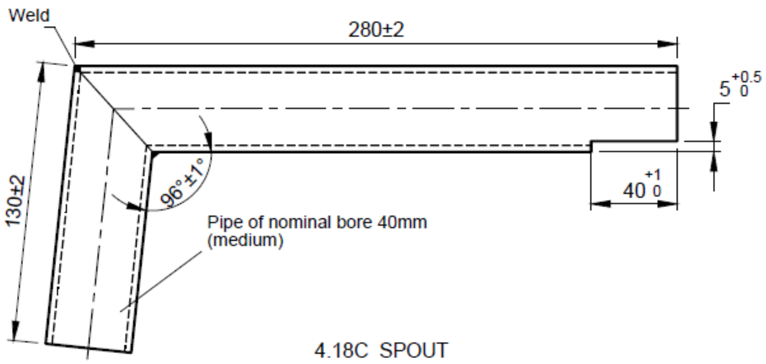
1. Fillet size of weld at all places shall be 5 mm minimum, excepting spout where it shall not be less than 4 mm. The inside welding of the tank pipe shall be given a sealing run.
2. One side of the coupling to be faced.
3. Sealing run on the top flange to be ground smooth.
4. Verticality of the riser pipe holder to be ensured during fabrication.

FIG. 4.17 WATER TANK – 65

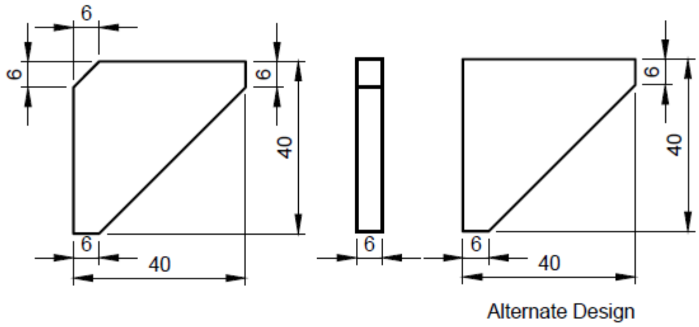


4.18A TANK PIPE

4.18B TANK TOP FLANGE



4.18C SPOUT

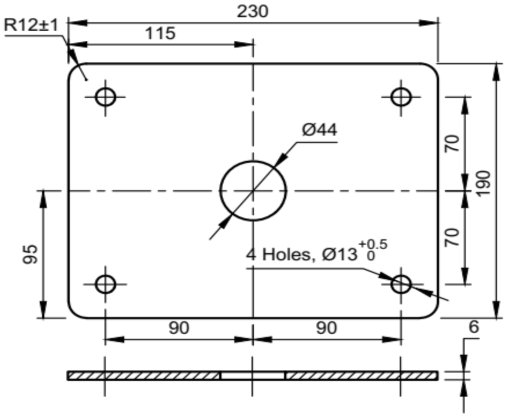


4.18D GUSSET

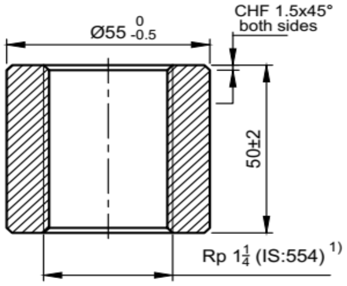
Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

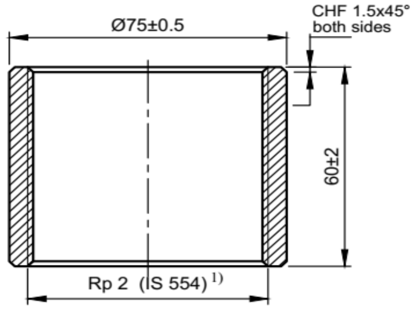
FIG. 4.18 PARTS OF WATER TANK (*Continued*)



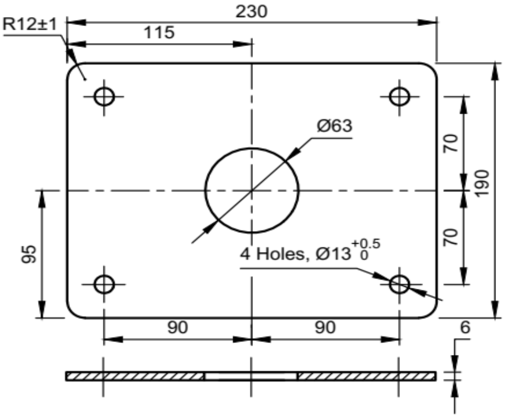
4.18E TANK BOTTOM FLANGE- 32
(For SDWP & EDWP)



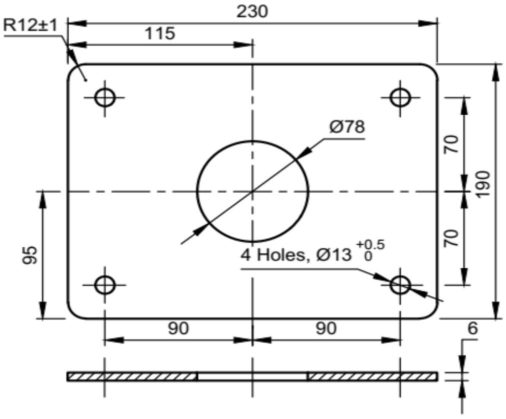
4.18F RISER PIPE HOLDER - 32
(For SDWP & EDWP)



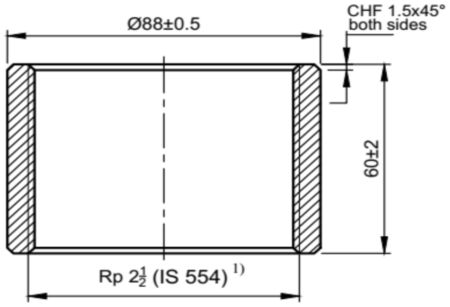
4.18G RISER PIPE HOLDER - 50



4.18H TANK BOTTOM FLANGE - 50



4.18I TANK BOTTOM FLANGE - 65



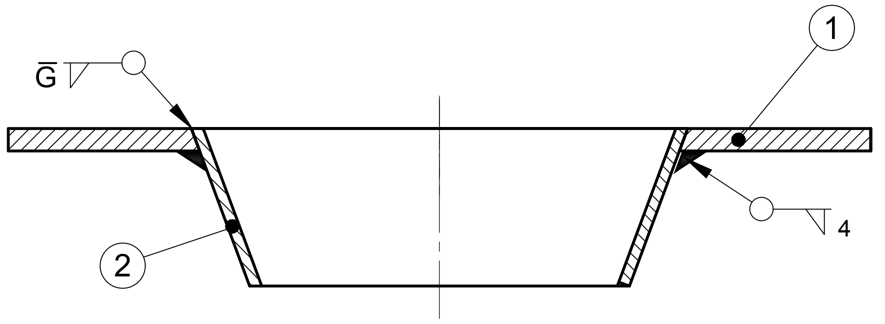
4.18J RISER PIPE HOLDER - 65

1) Indicates critical dimensions

Manufacturing tolerance to be ±0.5 unless otherwise specified

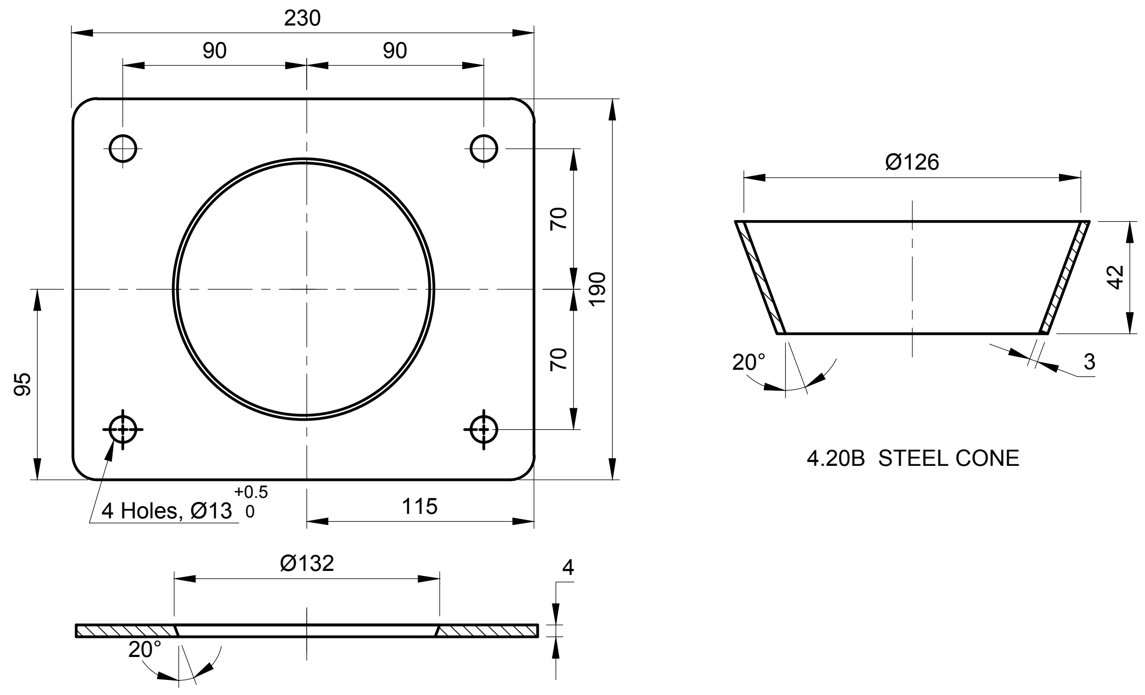
All dimensions in millimetres

FIG. 4.18 PARTS OF WATER TANK



2	1	Steel Cone	Fig. 4.20B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Cone Flange	Fig. 4.20A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

FIG. 4.19 CONE PLATE



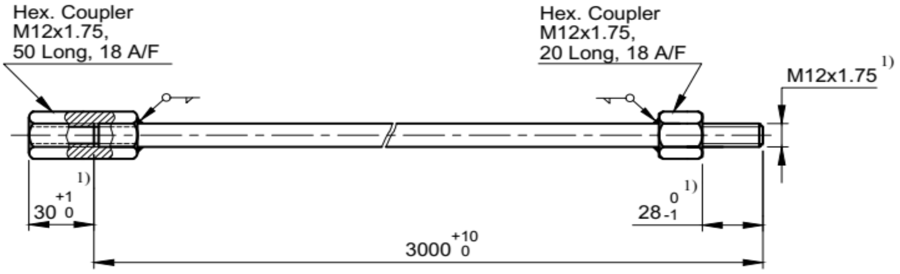
4.20B STEEL CONE

4.20A CONE FLANGE

Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

FIG. 4.20 PARTS OF CONE PLATE

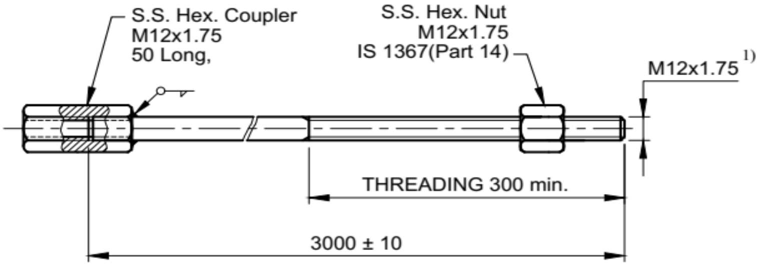


NOTES
1. Electro-galvanizing according to IS 1573 service grade No. 4.
2. The tolerance of threads shall conform to IS 4218 (Part 4) and IS 4218(Part 5), class 6g for bolts and 6H for nuts.

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 4.21A CONNECTING ROD

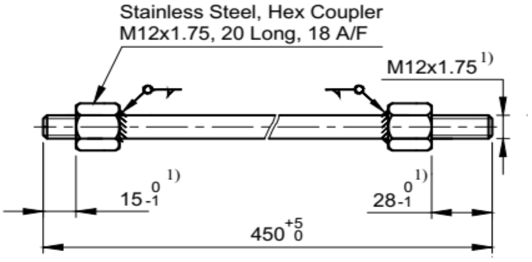


NOTES
1. Material - Stainless Steel conforming to IS 6603.
2. The tolerance of threads shall conform to IS 4218 (Part 4) and IS 4218(Part 5), class 6g for bolts and 6H for nuts.

1) Indicates critical dimensions

All dimensions in millimetres

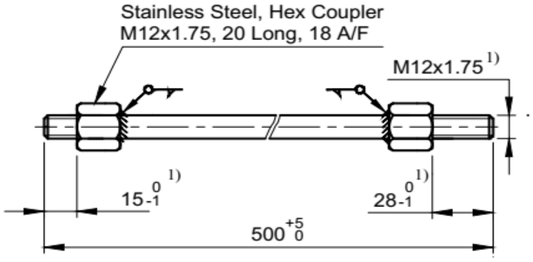
FIG. 4.21B S.S. TOP CONNECTING ROD



1) Indicates critical dimensions

All dimensions in millimetres

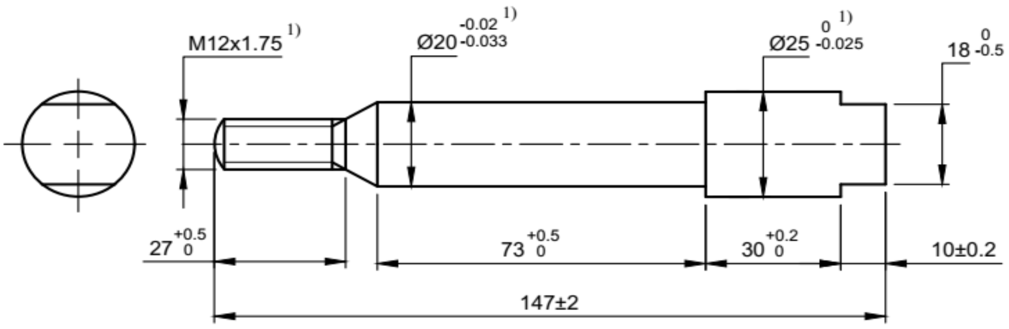
Fig. 4.22 Plunger ROD-Standard
(for SDWP and FLP)



1) Indicates critical dimensions

All dimensions in millimetres

Fig. 4.23 Plunger ROD-Long
(for EDWP, VLOM 65 and FLP)

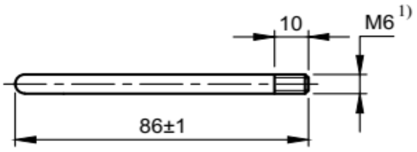


NOTE - Relief as per Type E of IS 3428 shall be provided.

1) Indicates critical dimensions

All dimensions in millimetres

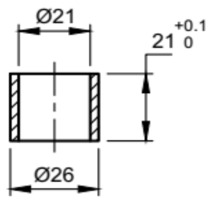
FIG. 4.24 HANDLE AXLE



1) Indicates critical dimensions

All dimensions in millimetres

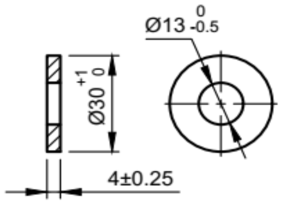
FIG. 4.25 PUSH ROD



1) Indicates critical dimensions

All dimensions in millimetres

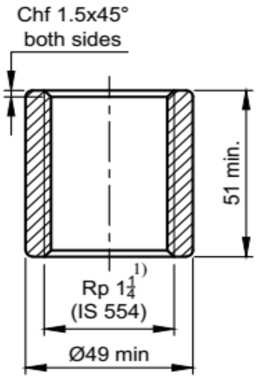
FIG. 4.26 EARING SPACER



1) Indicates critical dimensions

All dimensions in millimetres

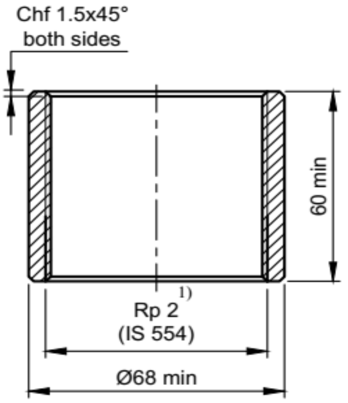
FIG. 4.27 WASHER



1) Indicates critical dimensions

All dimensions in millimetres

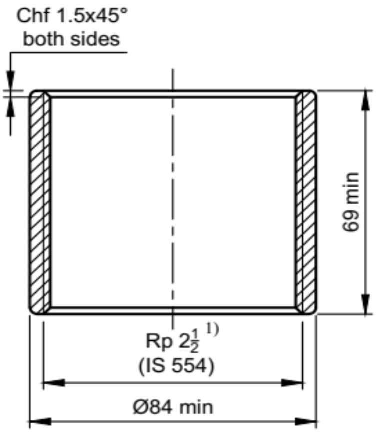
FIG. 4.28 SOCKET-35
(FOR SDWP & EDWP and FLP)



1) Indicates critical dimensions

All dimensions in millimetres

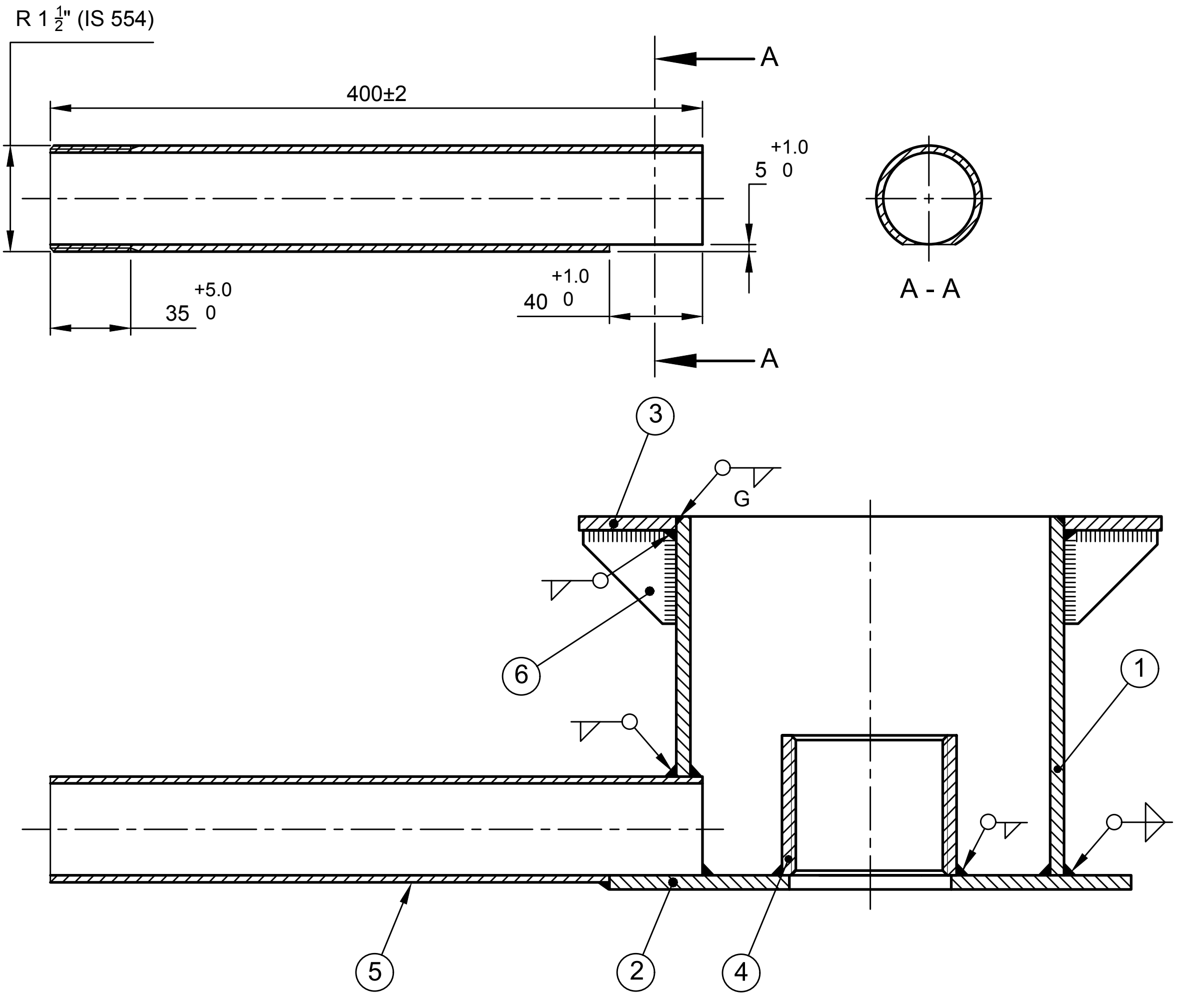
FIG. 4.29 SOCKET-50
(FOR VLOM 50)



1) Indicates critical dimensions

All dimensions in millimetres

FIG. 4.30 SOCKET-65
(FOR VLOM 65 & FLP)



Part No.	No. Off	Description	Reference	Material	
6	2	Gusset	Fig 4.18D	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Spout		MS Tube 40NB	Medium,IS 1239 (Part 1)
4	1	Riser Pipe Holder - 32	Fig 4.18F	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Tank Top Flange	Fig 4.18B	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Tank Bottom Flange - 32	Fig 4.18E	HR Section	Quality A of Grade E 250 of IS 2062
1	1	Tank Pipe	Fig 4.18A	MS Tube 150NB	Medium,IS 1239 (Part 1)

NOTES:

1. Fillet size of weld at all places shall be 5 mm minimum, excepting spout where it shall not be less than 4 mm. The inside welding of the tank pipe shall be given a sealing run.
2. One side of the coupling to be faced.
3. Sealing run on the top flange to be ground smooth.
4. Verticality of the riser pipe holder to be ensured during fabrication.

All dimensions in m illimetres

FIG. 4.31 WATER TANK FLP-32

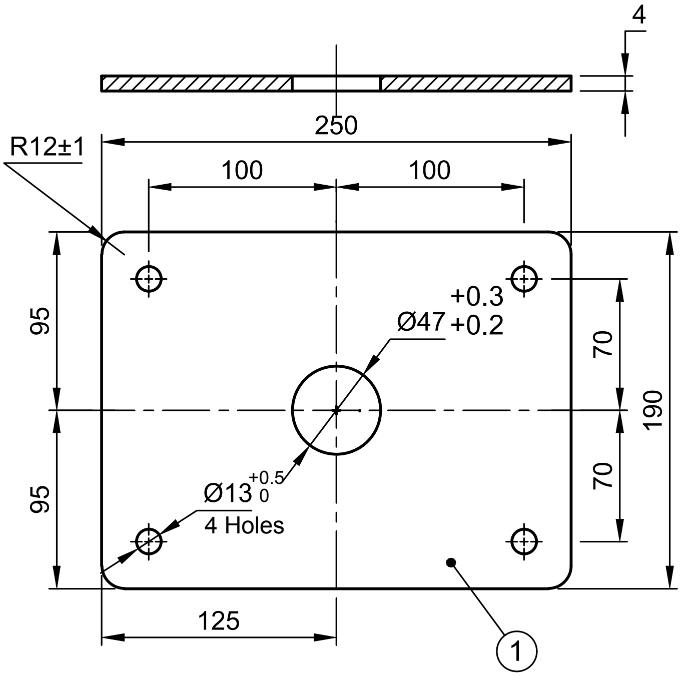
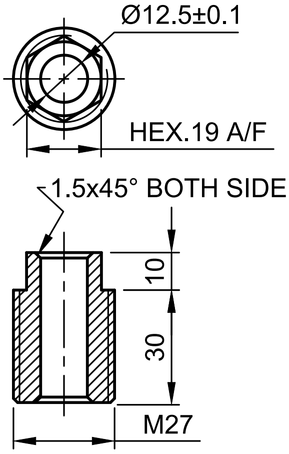


Fig. 4.32 Flange for Third Plate



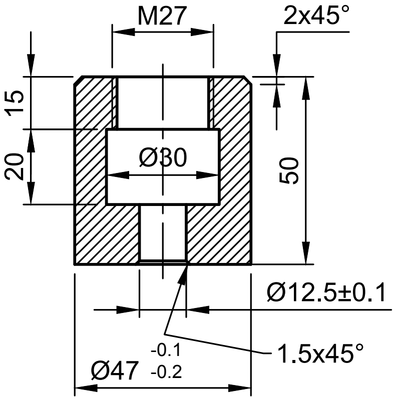
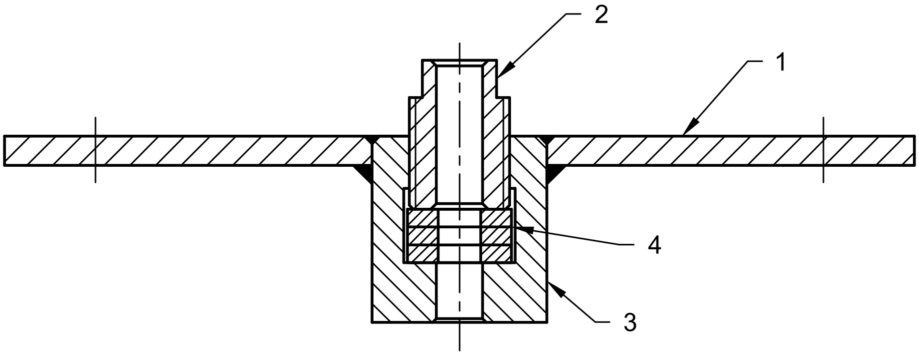


Fig. 4.33 Pressure Nut

Fig. 4.34 Fixed Housing



4	3	Rubber Washer	Fig 7.18	NBR	Nitrile Rubber
3	1	Fixed Housing	Fig 4.34	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Pressure Nut	Fig 4.33	Bronze	LBT of IS 318
1	1	Flange	Fig 4.32	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

Manufacturing tolerance to be ±0.5 unless otherwise specified
All dimensions in millimetres

FIG. 4.35 THIRD PLATE (for FLP)

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 5 CAST IRON COMPONENTS

1 SCOPE

1.1 This Indian Standard (Part 5) specifies the requirements of cast iron components used in the assembly of each type of handpump (SDWP, VLOM-65, VLOM-50, EDWP and FLP) covered in this standard.

1.2 This part shall be read with Part 1. Stipulations provided therein, whichever relevant to the components covered in this part, shall apply.

2 CONSTRUCTION

2.1 The constructional details of different components covered in this part shall be as given in Fig. **5.1** to **5.8**.

2.2 The material and dimensions shall meet the related prerequisites given in **4** and **5** of Part 1.

2.3 The exterior surfaces of the cast iron components shall be given the treatment as mentioned in **6** of Part 1.

3 TESTING

3.1 Group of each type of component covered in this part shall be treated as a separate lot.

3.2 Test samples shall be drawn as per procedure described in **9.3** of Part 1.

3.3 The critical dimensions of all the components selected as per **3.2** shall be checked for conformance with the relevant figures given in this part.

3.4 Criteria for Conformity

3.4.1 The individual lot of components, as defined in **3.1** shall be considered conforming to the requirements of the standard, if the batch for the particular lot selected according to **3.2** satisfies the requirements given in **3.4.2**.

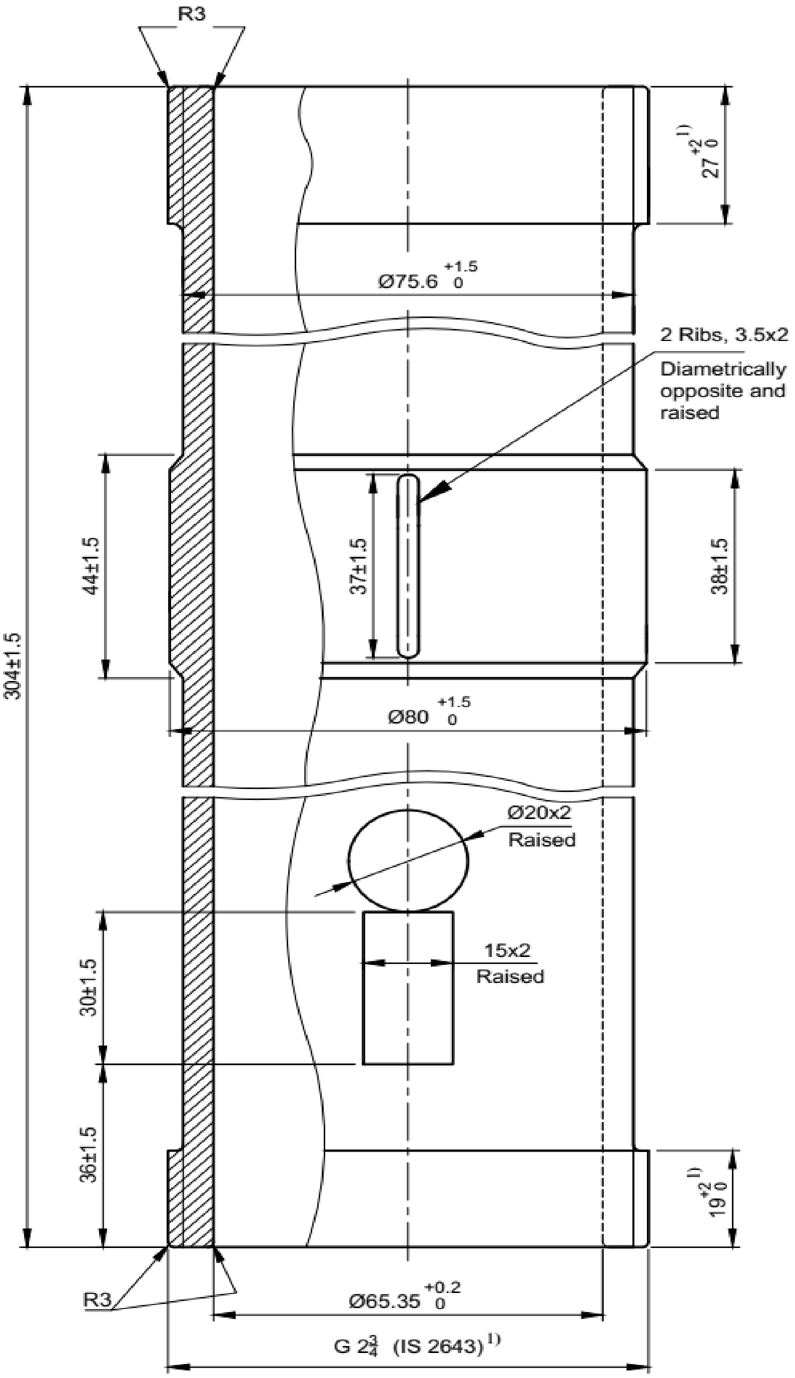
3.4.2 The number of components not meeting the requirements of a characteristic inspected under **3.3** shall not exceed the corresponding acceptance number as specified in IS 2500 (Part 1).

4 MARKING

The requirements given in **11.5.3** of Part 1 shall be followed.

5 PACKING

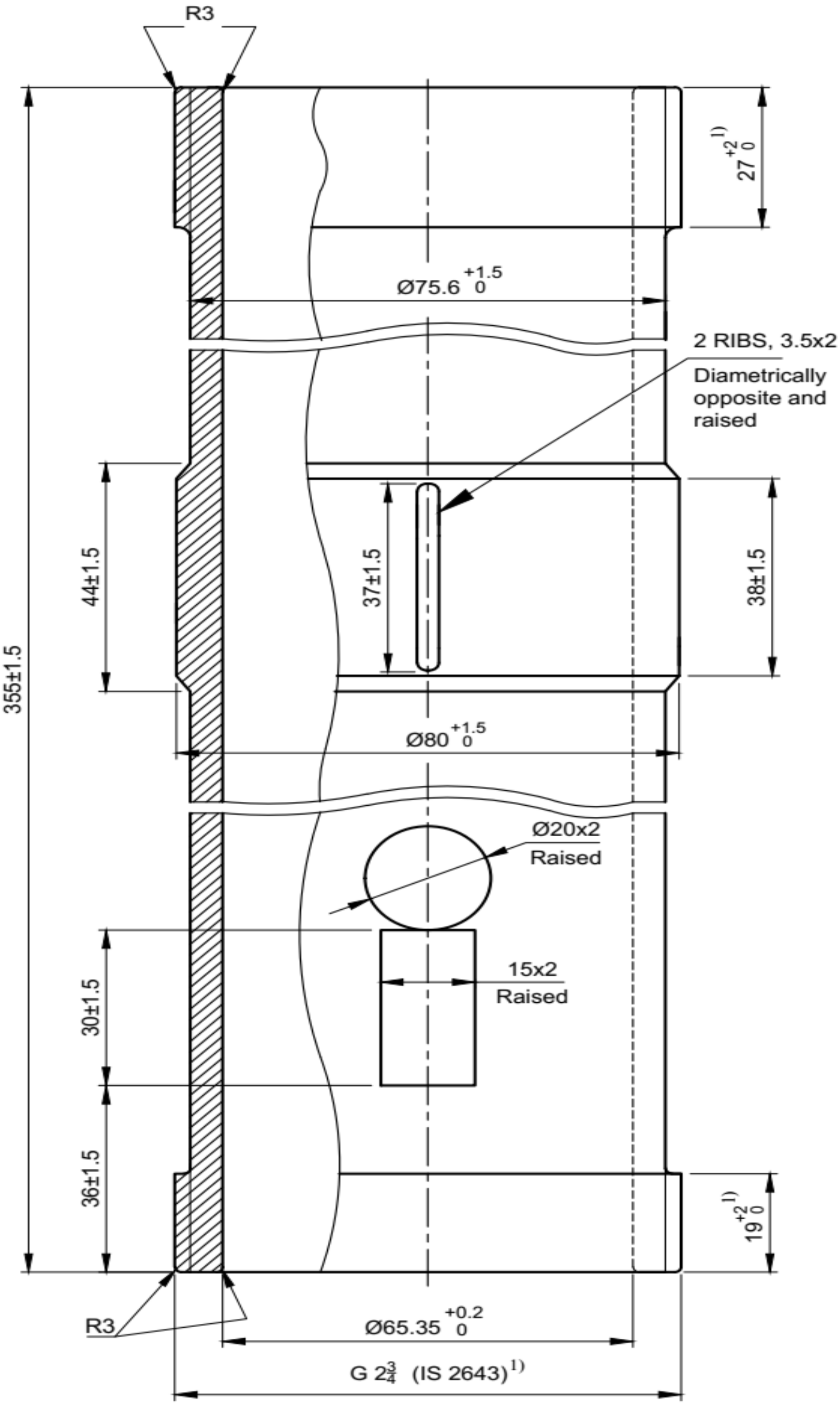
The requirements of **12.1** and **12.2** of Part 1 shall apply.



1) Indicates critical dimensions

All dimensions in millimetres

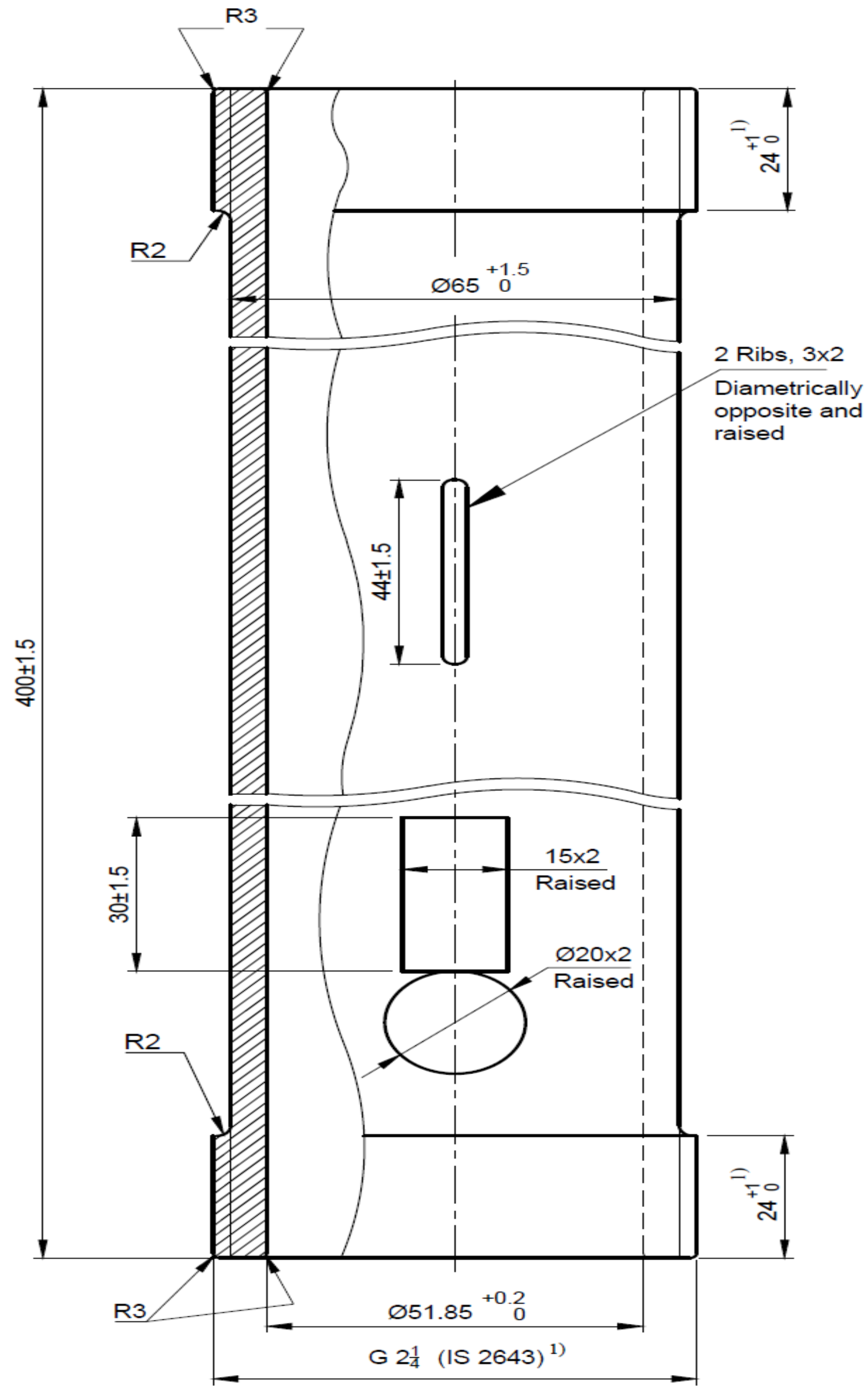
FIG. 5.1 CYLINDER BODY-STANDARD
(FOR SDWP and FLP)



1) Indicates critical dimensions

All dimensions in millimetres

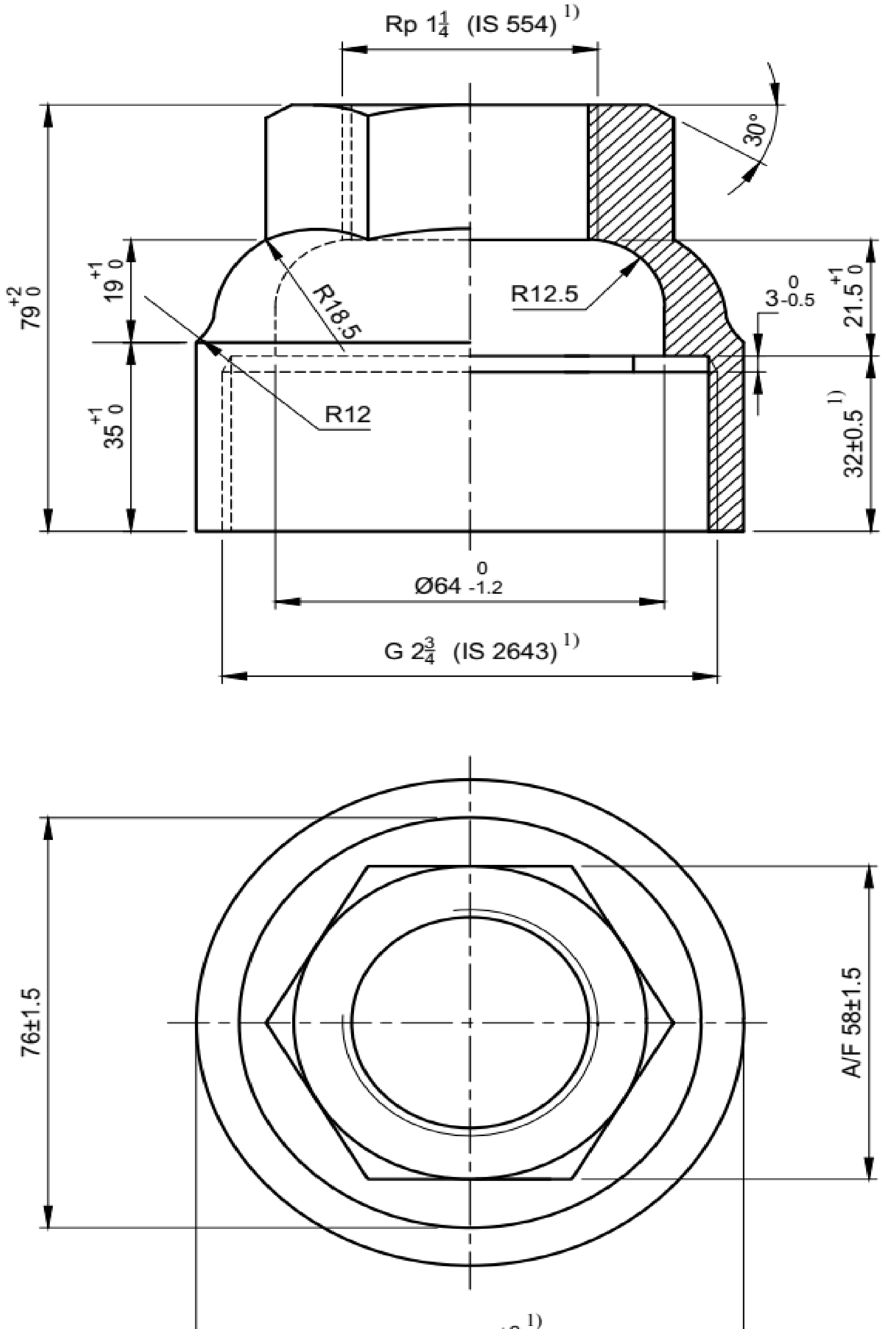
FIG. 5.2 CYLINDER BODY-LONG
(FOR EDWP and VLOM 65)



1) Indicates critical dimensions

All dimensions in millimetres

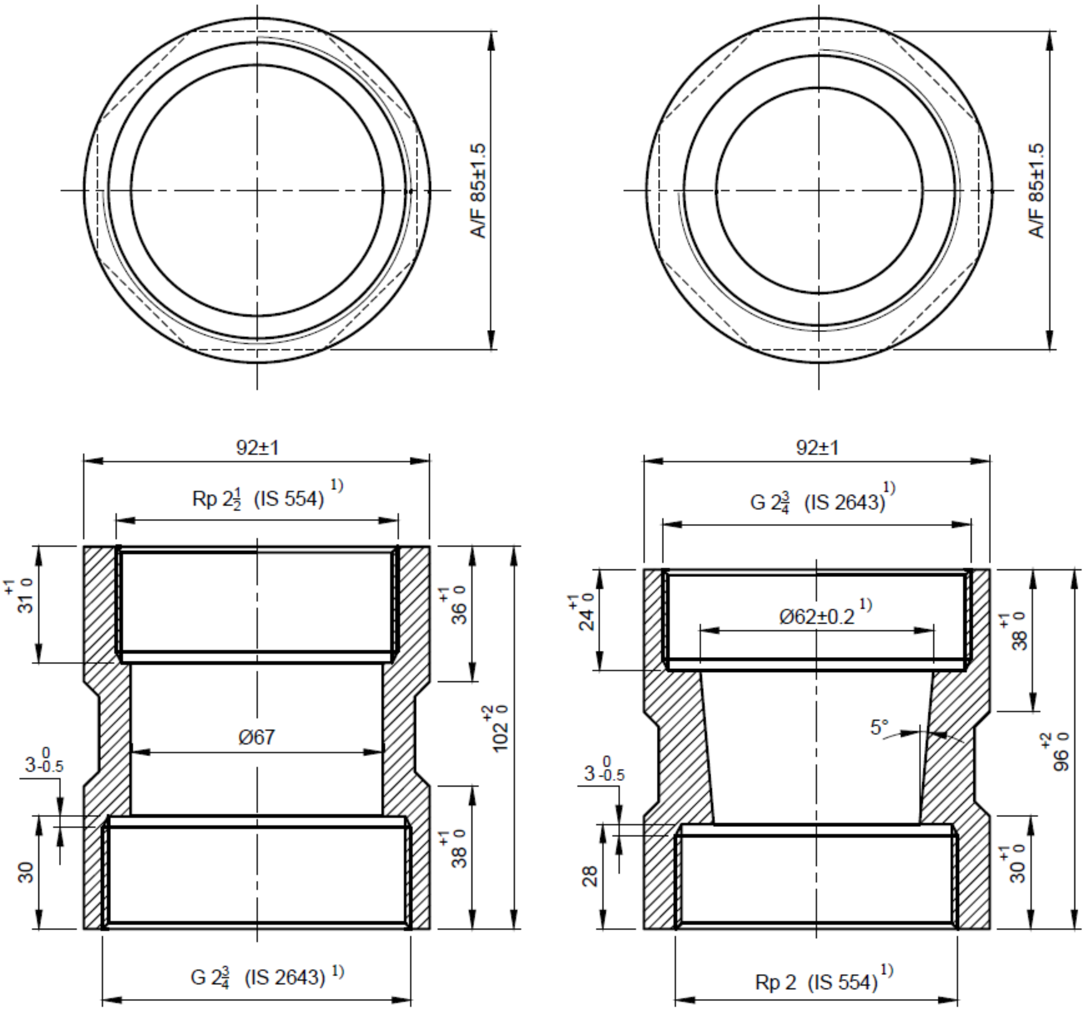
FIG. 5.3 CYLINDER BODY-VLOM 50



1) Indicates critical dimensions

All dimensions in millimetres

Fig. 5.4 Reducer Cap
(for SDWP, EDWP and FLP)



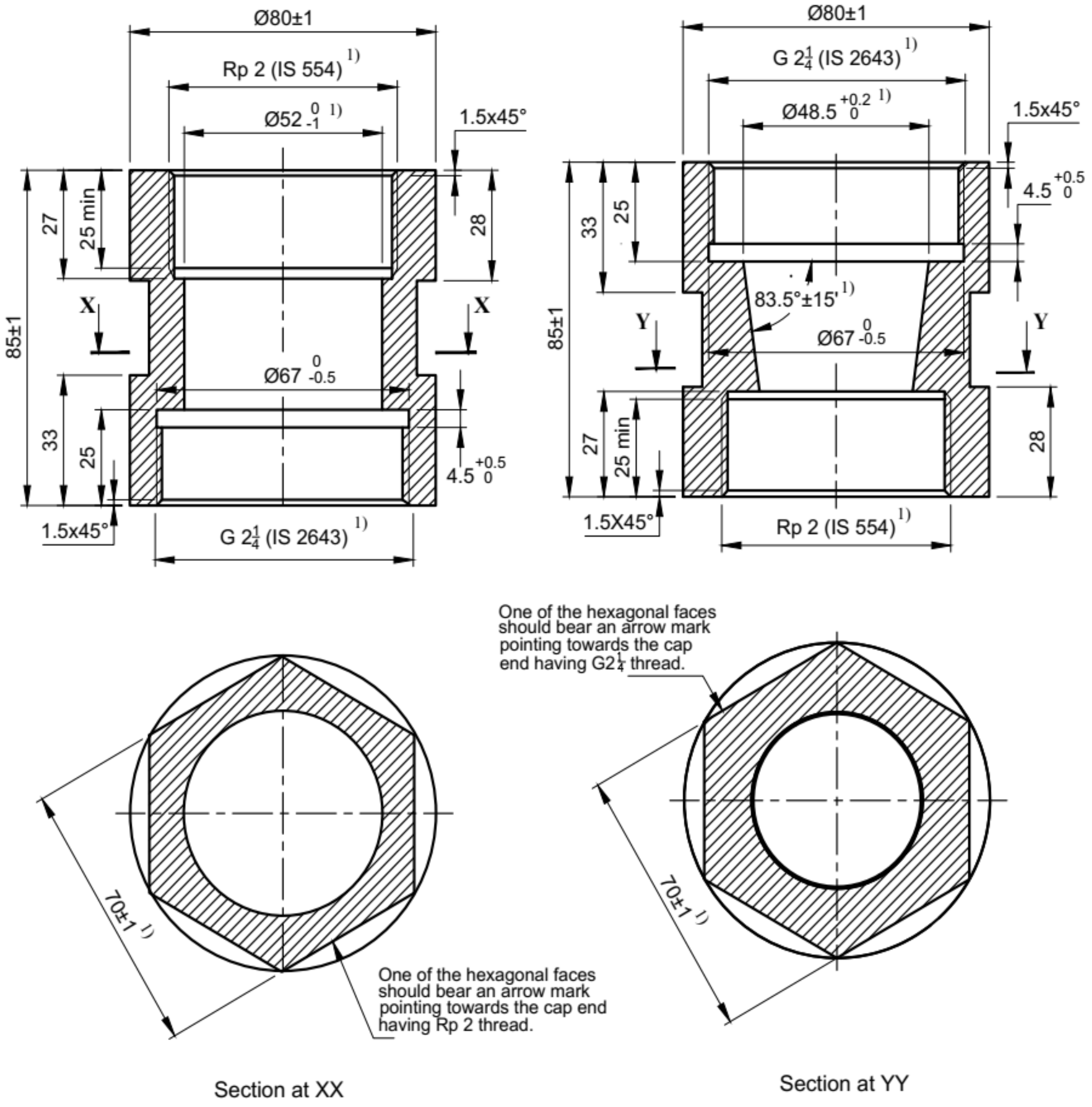
5.5A UPPER CAP - VLOM 65

5.5B BOTTOM CAP - VLOM 65

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 5.5 CYLINDER CAPS-VLOM 65
(FOR SDWP and EDWP)



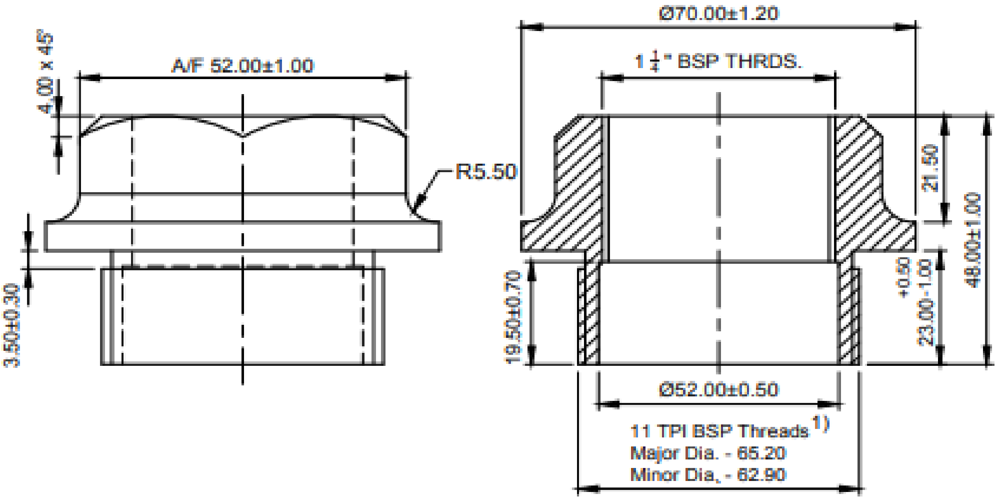
5.6A UPPER CAP - VLOM 50

5.6B BOTTOM CAP - VLOM 50

1) Indicates critical dimensions

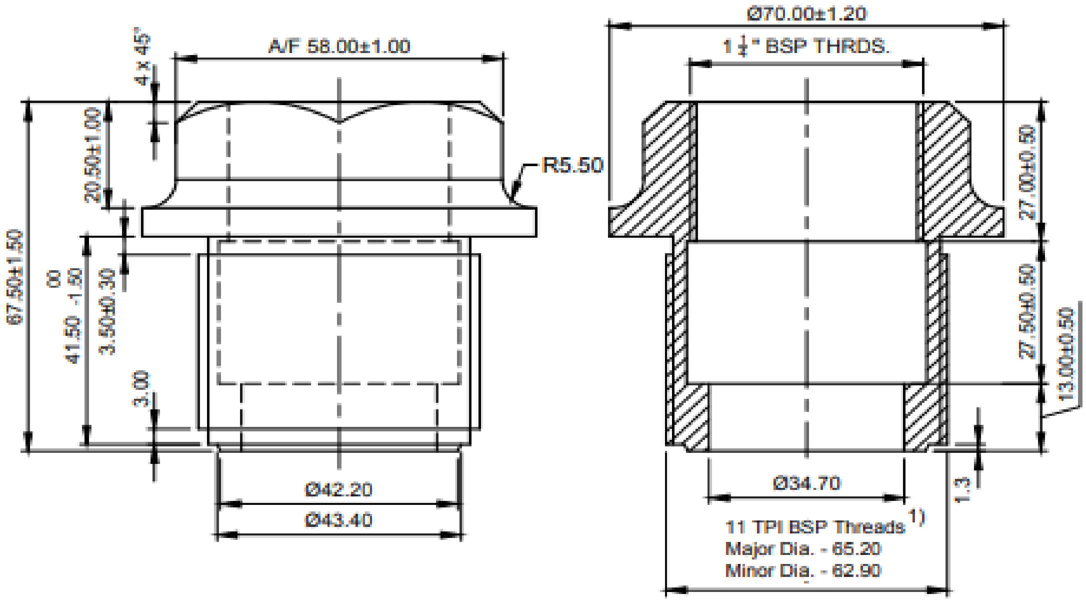
All dimensions in millimetres

FIG. 5.6 CYLINDER CAPS-VLOM 50



1) Indicates critical dimensions
All dimensions in millimetres

Fig. 5.7 Upper Cap (for FLP)



1) Indicates critical dimensions
All dimensions in millimetres

Fig. 5.8 Lower Cap (for SDWP and FLP)

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 6 BRASS/BRONZE OR STAINLESS STEEL CASTCOMPONENTS

1 SCOPE

1.1 This Indian Standard (Part 6) specifies the requirements of brass and leaded-tin-bronze or stainless steel cast components used in the assembly of each type of hand pump (SDWP, VLOM-65, VLOM- 50, EDWP and FLP) covered in this standard.

1.2 This part shall be read with Part 1. The stipulations provided therein, whichever relevant to the components covered in this part shall apply.

2 CONSTRUCTION

2.1 The constructional details of different components covered in this part shall be as given in Fig. **6.1** to **6.16**.

2.2 The material and dimensions shall meet the related prerequisites given in **4** and **5** of Part 1.

3 TESTING

3.1 Group of each type of component covered in this part shall be treated as a separate lot.

3.2 Test samples shall be drawn as per procedure described in **9.3** of Part 1.

3.3 The critical dimensions of all the components selected as per **3.2** shall be checked for conformance with the relevant figures given in this part.

3.4 Criteria for Conformity

3.4.1 The individual lot of components, as defined in **3.1**, shall be considered conforming to the requirements of the standard, if the batch for the particular lot selected according to **3.2**, shall satisfy the requirements given in **3.4.2**.

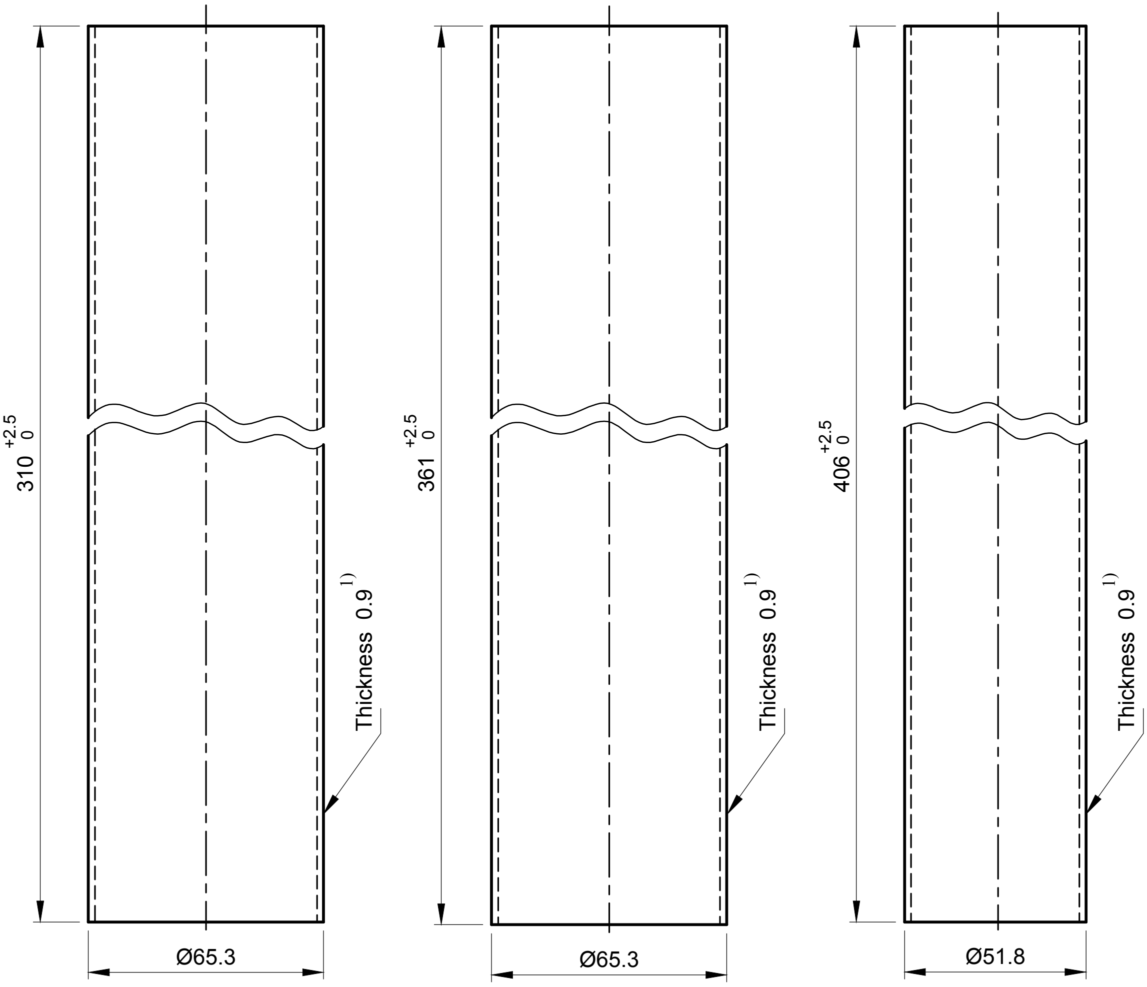
3.4.2 The number of components not meeting the requirements of a characteristic inspected under **3.3** shall not exceed the corresponding acceptance number as specified in IS 2500 (Part 1).

4 MARKING

The requirements given in **11.5.4** of Part 1 shall be followed.

5 PACKING

The requirements of **12.1** and **12.2** of Part 1 shall apply.



6.1A BRASS LINER – SHORT
(For SDWP and FLP)

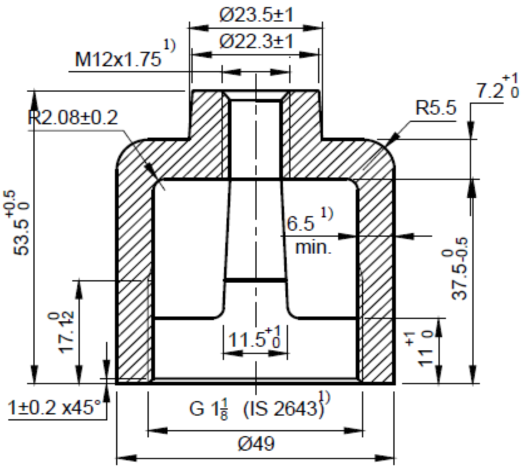
6.1B BRASS LINER – LONG
(For EDWP & VLOM 65)

6.1C BRASS LINER – VLOM 50
(For VLOM 50)

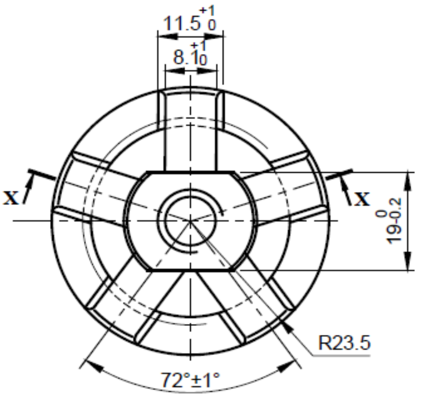
1) Indicates critical dimensions

All dimensions in millimetres

FIG. 6.1 BRASS LINER



Section at XX

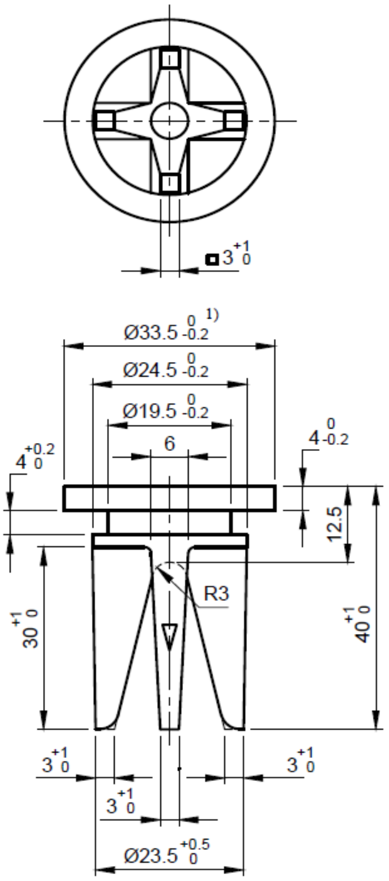


NOTE: Section 19 A/F can be at any location

1) Indicates critical dimensions

All dimensions in millimetres

Fig. 6.2 Plunger Yoka Body
(for SDWP, EDWP, VLOM 65 and FLP)

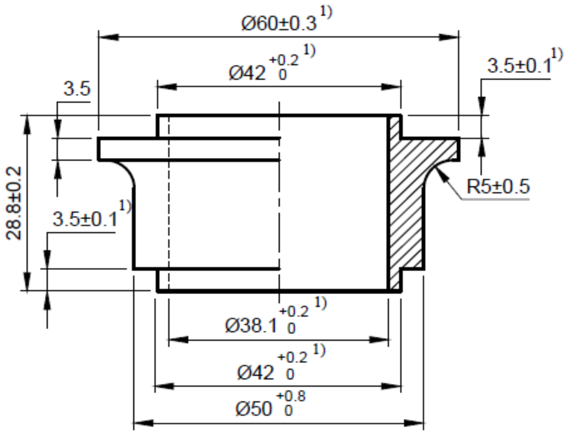


1) Indicates critical dimensions

All dimensions in millimetres

Fig. 6.3 Upper Valve
(for SDWP, EDWP, VLOM 65 and FLP)

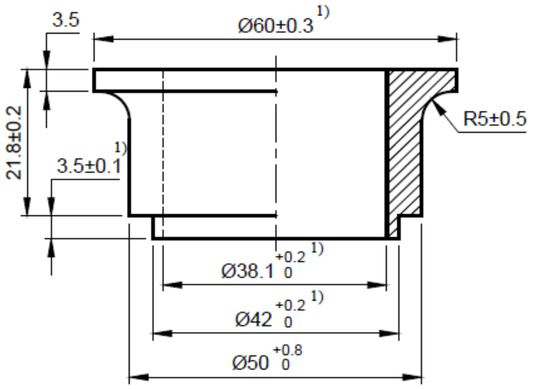
Ø60±0.3 1)



1) Indicates critical dimensions

All dimensions in millimetres

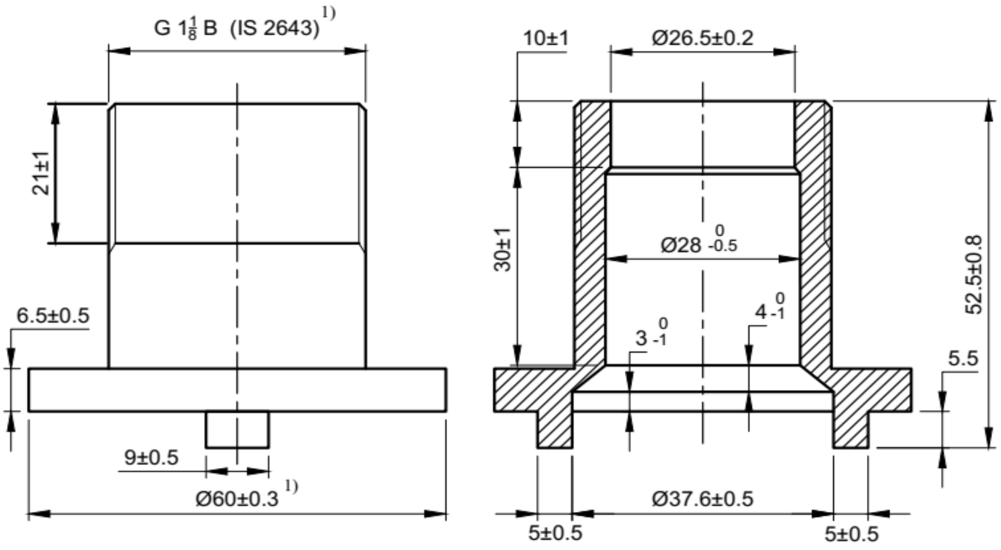
Fig. 6.4 Bucket Spacer-Standard
(for SDWP, EDWP, VLOM 65 and FLP)



1) Indicates critical dimensions

All dimensions in millimetres

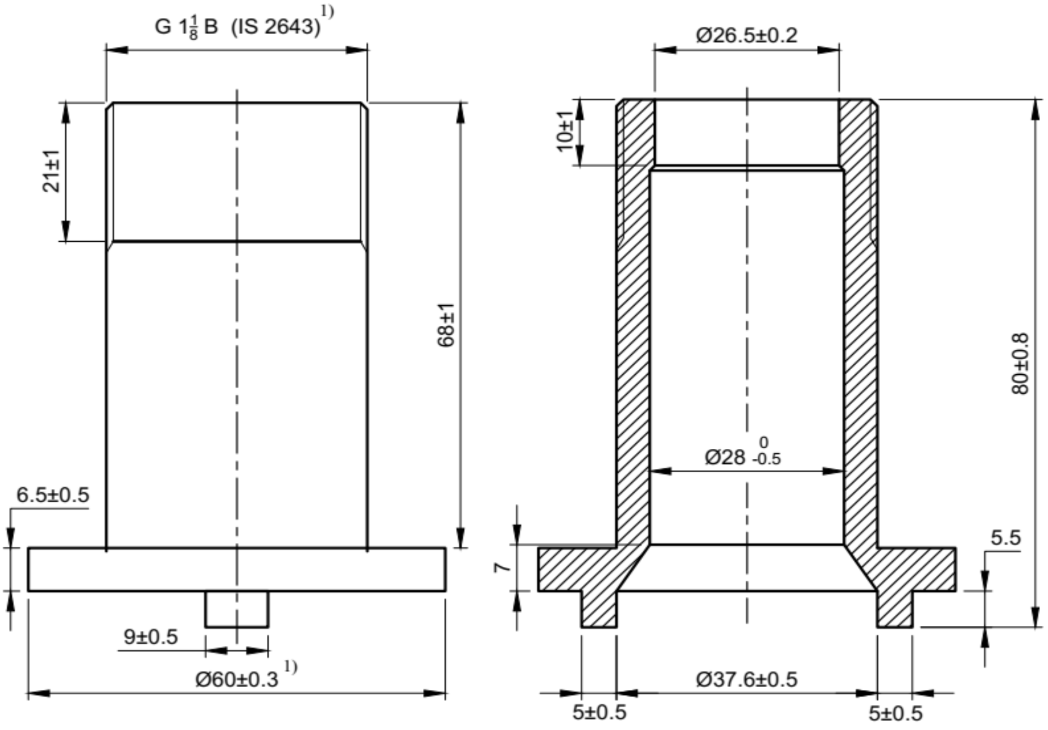
Fig. 6.5 Bucket Spacer-Lower
(for EDWP)



1) Indicates critical dimensions

All dimensions in millimetres

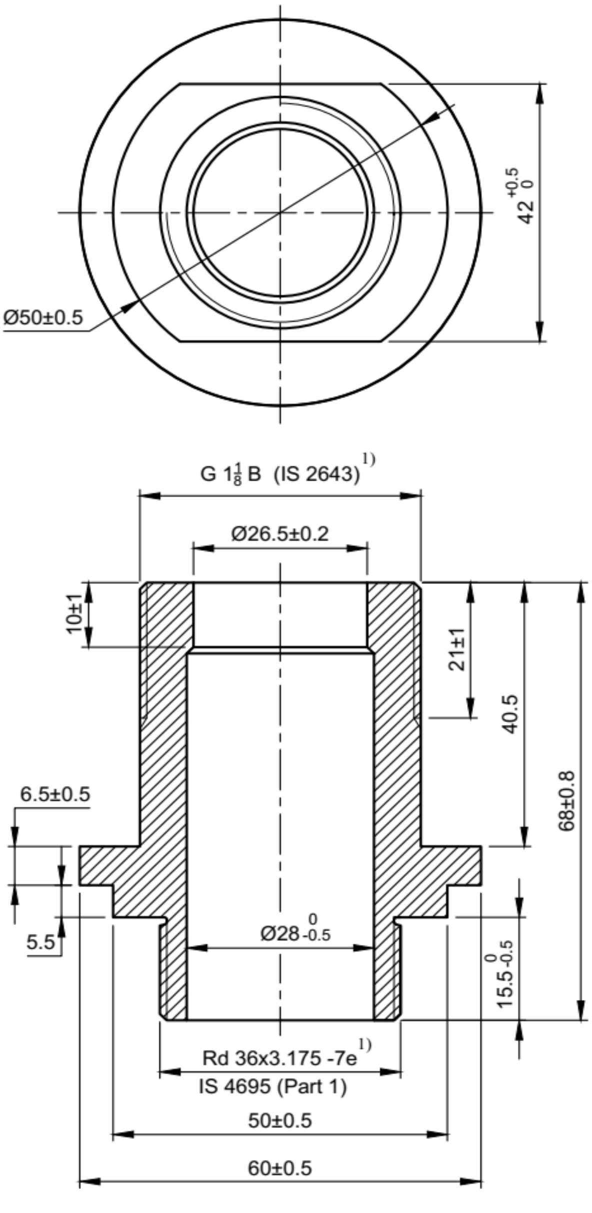
FIG. 6.6 FOLLOWER (SDWP and FLP)



1) Indicates critical dimensions

All dimensions in millimetres

FIG. 6.7 FOLLOWER-EDWP

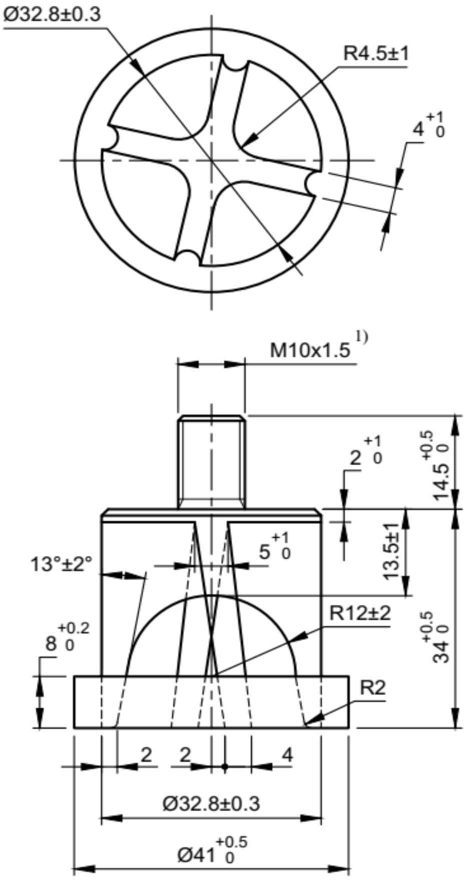


NOTE: 2x45° Chamfer at knuckle thread end and weak thread to be removed.

1) Indicates critical dimensions

All dimensions in millimetres

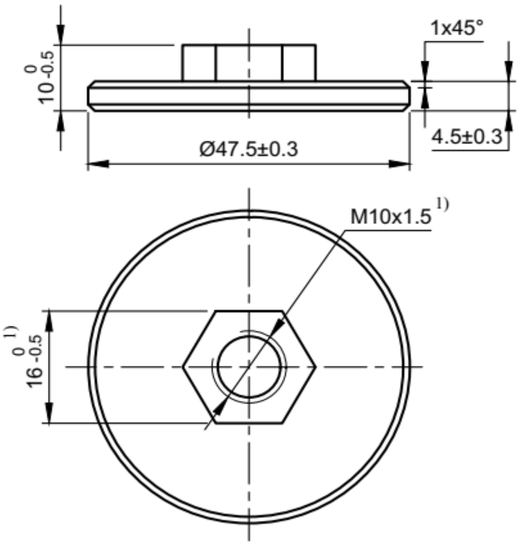
FIG. 6.8 FOLLOWER-VLOM 65



1) Indicates critical dimensions

All dimensions in millimetres

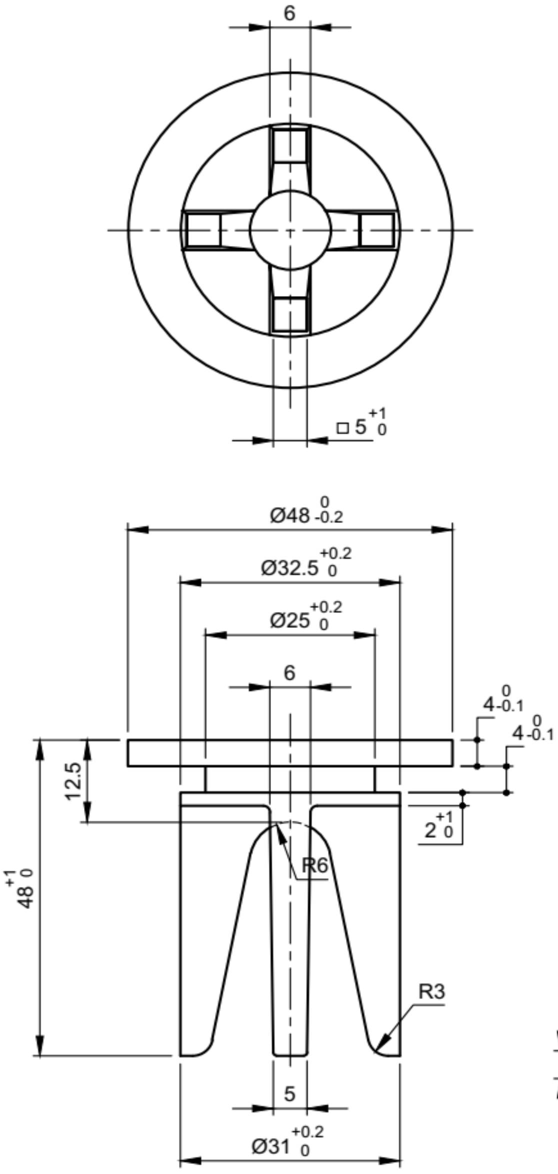
FIG. 6.9 CHECK VALVE-STANDARD (FOR SDWP, EDWP and FLP)



1) Indicates critical dimensions

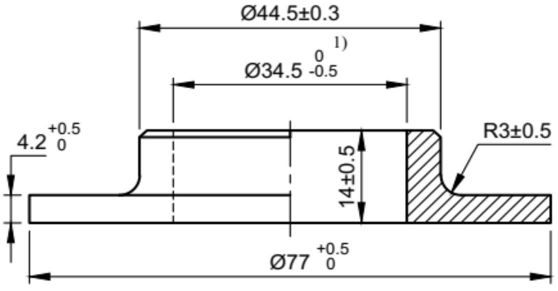
All dimensions in millimetres

FIG. 6.11 RUBBER SEAT RETAINER (FOR SDWP, EDWP & FLP)



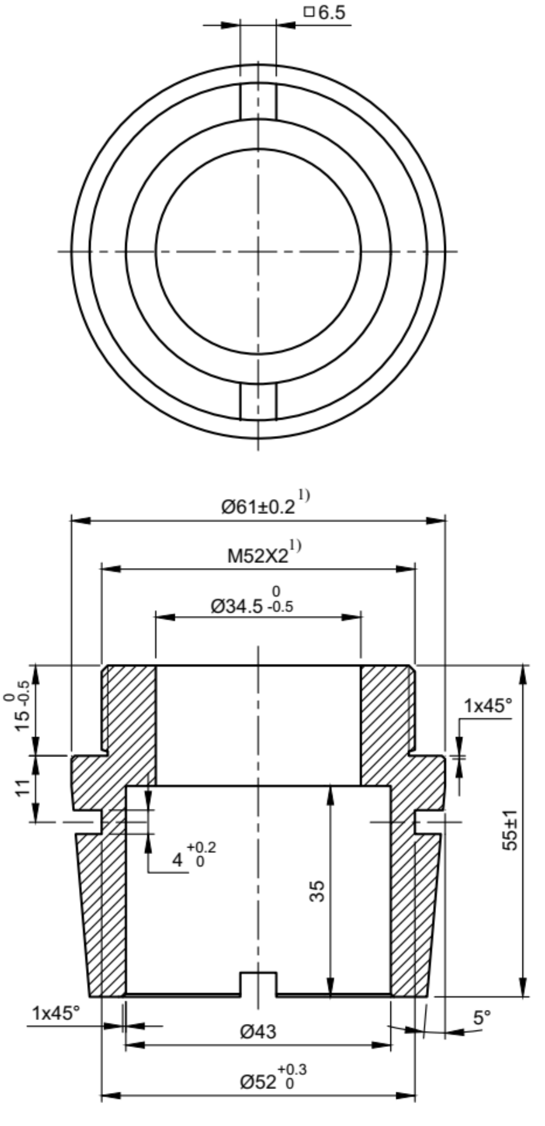
All dimensions in millimetres

FIG. 6.10 CHECK VALVE-VLOM 65



All dimensions in millimetres

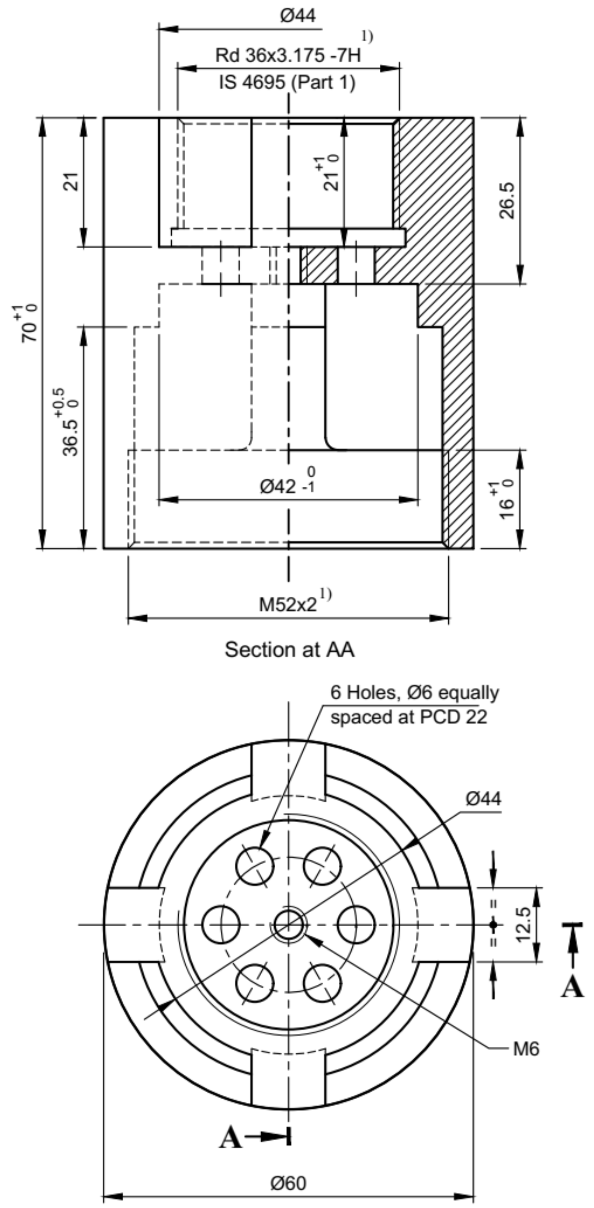
FIG. 6.12 CHECK VALVE SEAT-STANDARD (FOR SDWP & EDWP)



1) Indicates critical dimensions

All dimensions in millimetres

Fig. 6.13 Check Valve Seat-VLOM 65

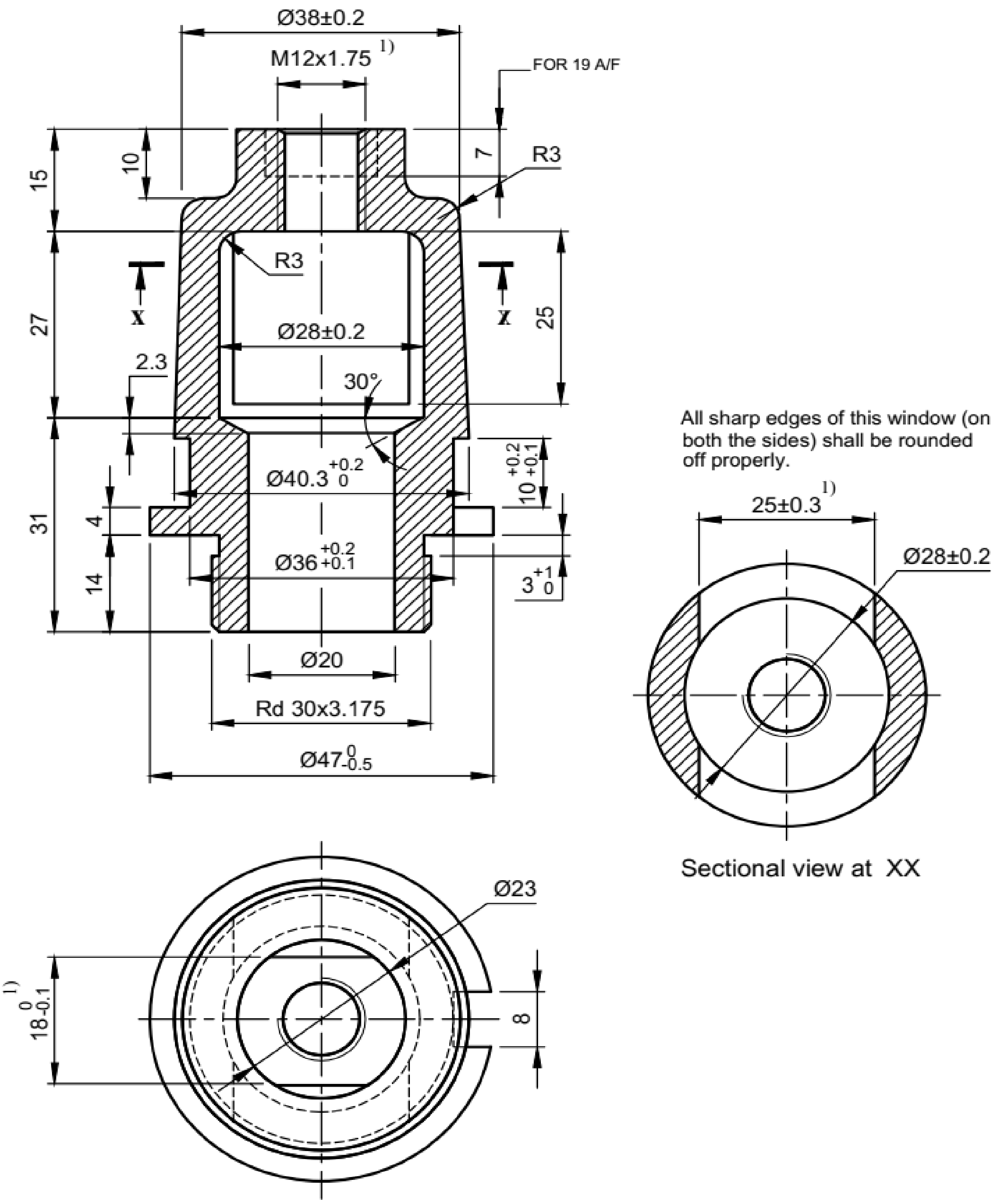


NOTE: 2x45° Chamfer at knuckle thread end and weak thread to be removed

1) Indicates critical dimensions

All dimensions in millimetres

Fig. 6.14 Cage
(for VLOM 65)



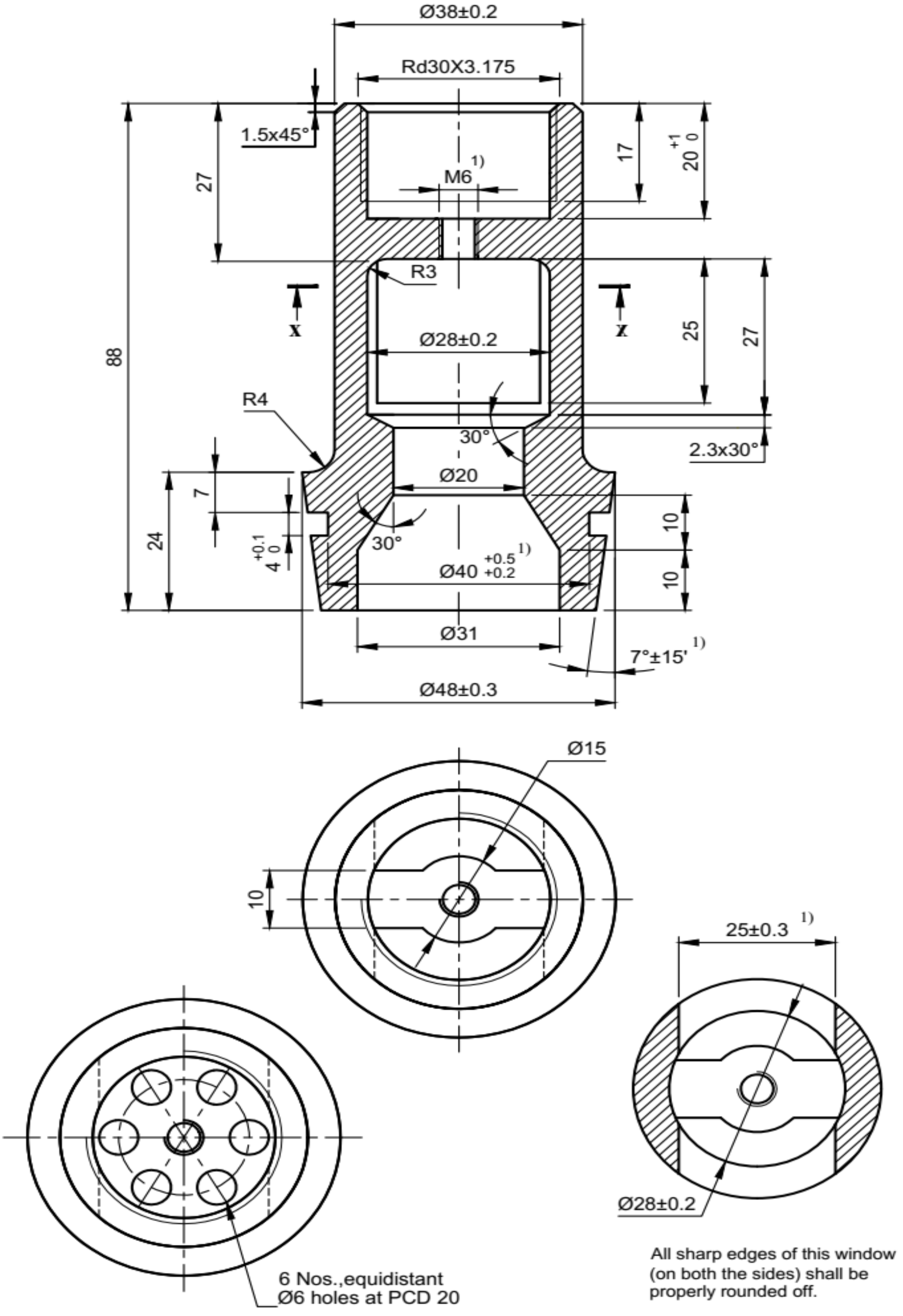
All sharp edges of this window (on both the sides) shall be rounded off properly.

Sectional view at XX

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 6.15 PLUNGER VALVE BODY-VLOM 50



All sharp edges of this window (on both the sides) shall be properly rounded off.

Alternate Plan view

Sectional view at XX

1) Indicates critical dimensions

All dimensions in millimetres

Fig. 6.16 Check Valve Body-VLOM 50

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 7 RUBBER COMPONENTS

1 SCOPE

1.1 This Indian Standard (Part 7) specifies the requirements of rubber components used in the assembly of each type of handpump (SDWP, VLOM-65, VLOM-50, EDWP and FLP) covered in this standard.

1.2 This Part shall be read with Part 1 Stipulations provided therein, whichever relevant to the components covered in this part, shall apply.

2 CONSTRUCTION

2.1 The constructional details of different components covered in this part shall be as given in Fig. **7.1** to **7.18**.

2.2 The material and dimensions shall meet the related prerequisites given in **4** and **5** of Part 1.

3 TESTING

3.1 Group of each type of component covered in this part shall be treated as a separate lot.

3.2 Test samples shall be drawn as per procedure described in **9.3** of Part 1.

3.3 The critical dimensions and hardness of all the components selected as per **3.2** shall be checked for conformance with the relevant figures given in this part.

3.4 Criteria for Conformity

3.4.1 The individual lot of components, as defined in **3.1** shall be considered conforming to the requirements of the standard, if the batch for the particular lot selected according to **3.2** shall satisfy the requirements given in **3.4.2**.

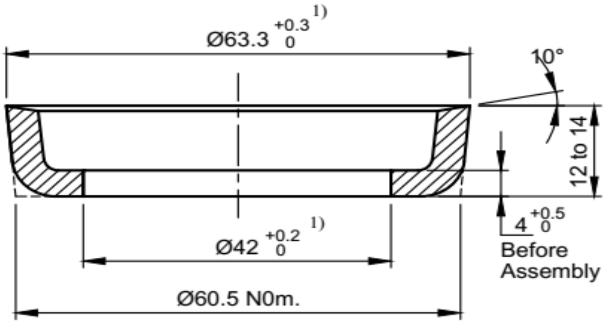
3.4.2 The number of components not meeting the requirements of a characteristic inspected under **3.3** shall not exceed the corresponding acceptance number as specified in IS 2500 (Part 1).

4 MARKING

The requirements given in **11.5.5** of Part 1 shall be followed.

5 PACKING

The requirements of **12.1** of Part 1 shall apply.

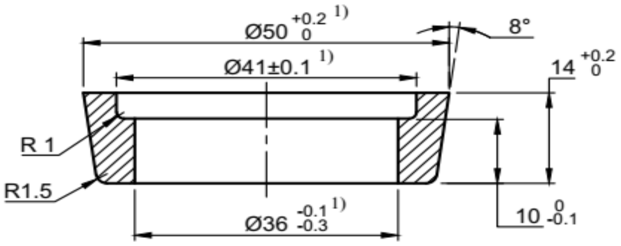


Shore Hardness 80^{+5}_{-4} Scale A

1) Indicates critical dimensions

All dimensions in millimetres

Fig. 7.1 Pump Bucket-Standard
(for SDWP, EDWP & VLOM 65)

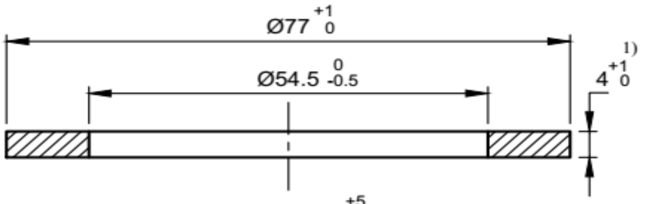


Shore Hardness 80^{+5}_{-4} Scale A

1) Indicates critical dimensions

All dimensions in millimetres

Fig. 7.2 Pump Bucket-VLOM 50

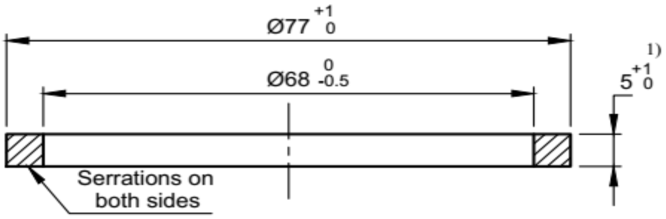


Shore Hardness 80^{+5}_{-4} Scale A

1) Indicates critical dimensions

All dimensions in millimetres

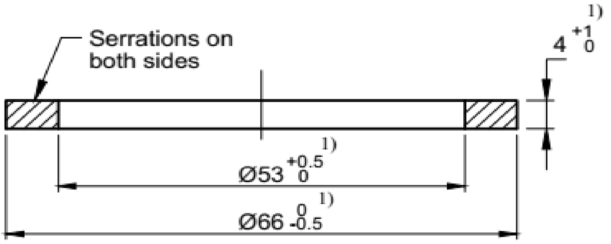
Fig. 7.3 Sealing Ring-Standard
(for SDWP, & EDWP)



Shore Hardness 80^{+5}_{-4} Scale A

All dimensions in millimetres

Fig. 7.4 Sealing Ring-VLOM 65

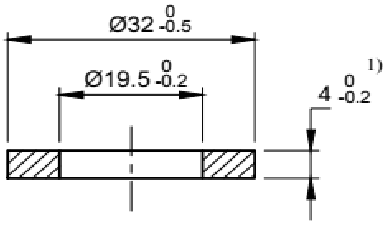


Shore Hardness 60 $^{+5}_{-4}$ on Scale A

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 7.5 SEALING RING-VLOM 50

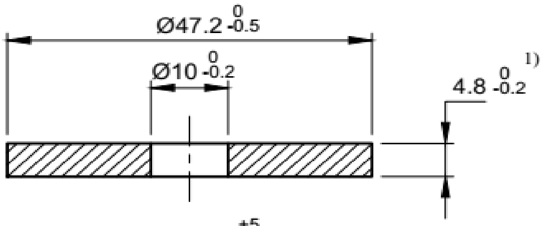


Shore Hardness 80 $^{+5}_{-4}$ on Scale A

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 7.6 UPPER VALVE SEATING
(FOR SDWP, EDWP, VLOM-65, FLP)

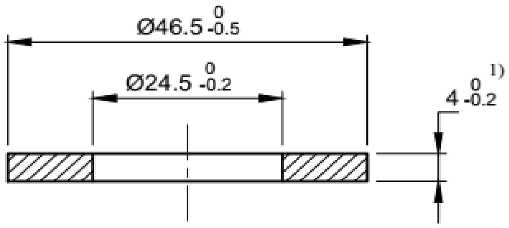


Shore Hardness 80 $^{+5}_{-4}$ on Scale A

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 7.7 LOWER VALVE SEATINH-STANDARD
(FOR SDWP, EDWP, and FLP)

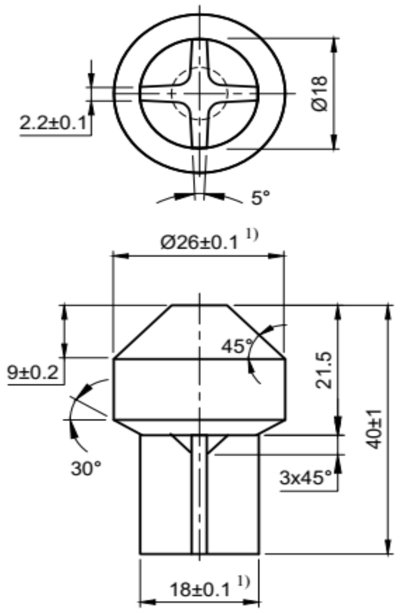


Shore Hardness 80 $^{+5}_{-4}$ on Scale A

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 7.8 LOWER VALVE SEATING-VLOM 65

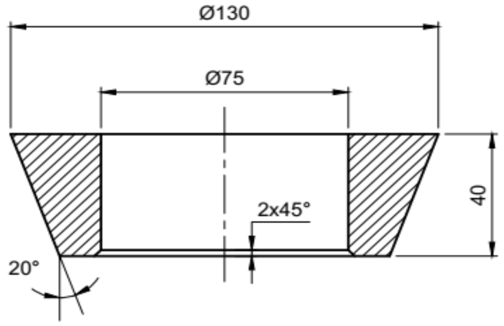


Shore Hardness 80^{+5}_{-4} on Scale A

1) Indicates critical dimensions

All dimensions in millimetres

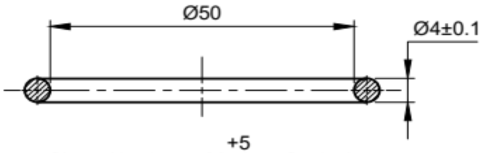
FIG. 7.9 BOBBIN
(FOR VLOM 50)



Shore Hardness 80^{+5}_{-4} on Scale A

All dimensions in millimetres

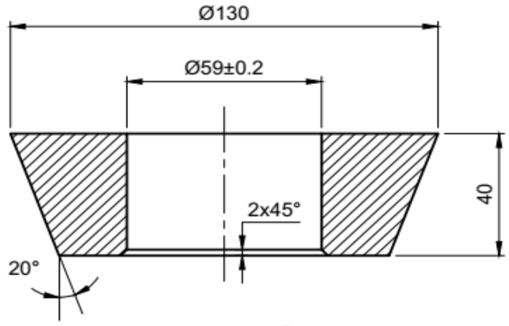
FIG. 7.12 RUBBER CONE-VLOM 65



Shore Hardness 60^{+5}_{-4} on Scale A

All dimensions in millimetres

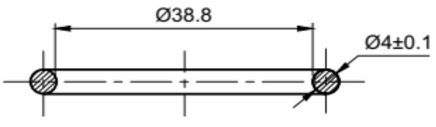
FIG. 7.10 O-RING-VLOM 65
(SDWP and FLP S.S CYLINDER)



Shore Hardness 80^{+5}_{-4} on Scale A

All dimensions in millimetres

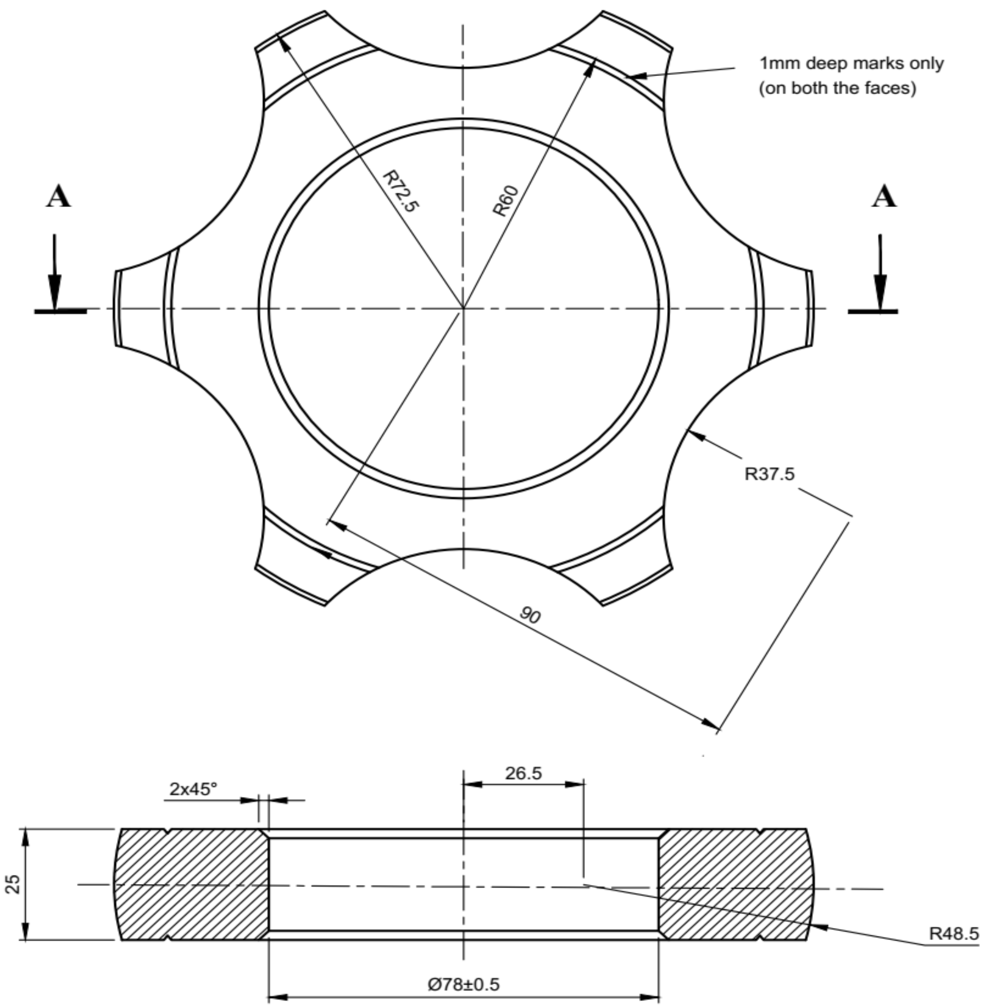
FIG. 7.13 RUBBER CONE-VLOM 50



Shore Hardness 60^{+5}_{-4} on Scale A

All dimensions in millimetres

FIG. 7.11 O-RING-VLOM 50



Section at A A

NOTE:

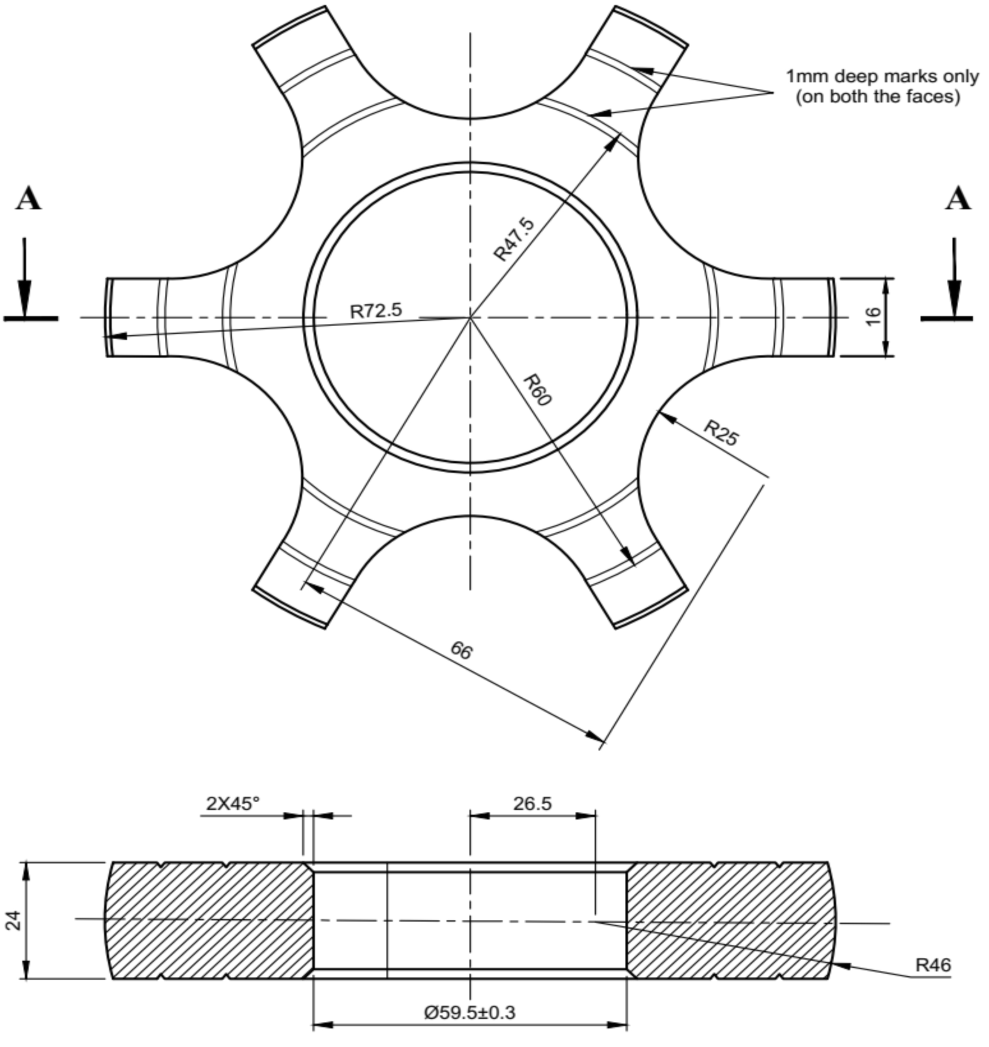
1. Only one centralizer to be provided resting against first pipe-joint from the top.
2. The above centralizer is suitable for 150 NB casing pipe. It may be trimed at R60 marks for use with 125 NB casing pipe.

SHORE HARDNESS 80^{+5}_{-4} ON SCALE A

Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

FIG. 7.14 PIPE CENTRALIZER-VLOM 65



Section at AA

NOTE:

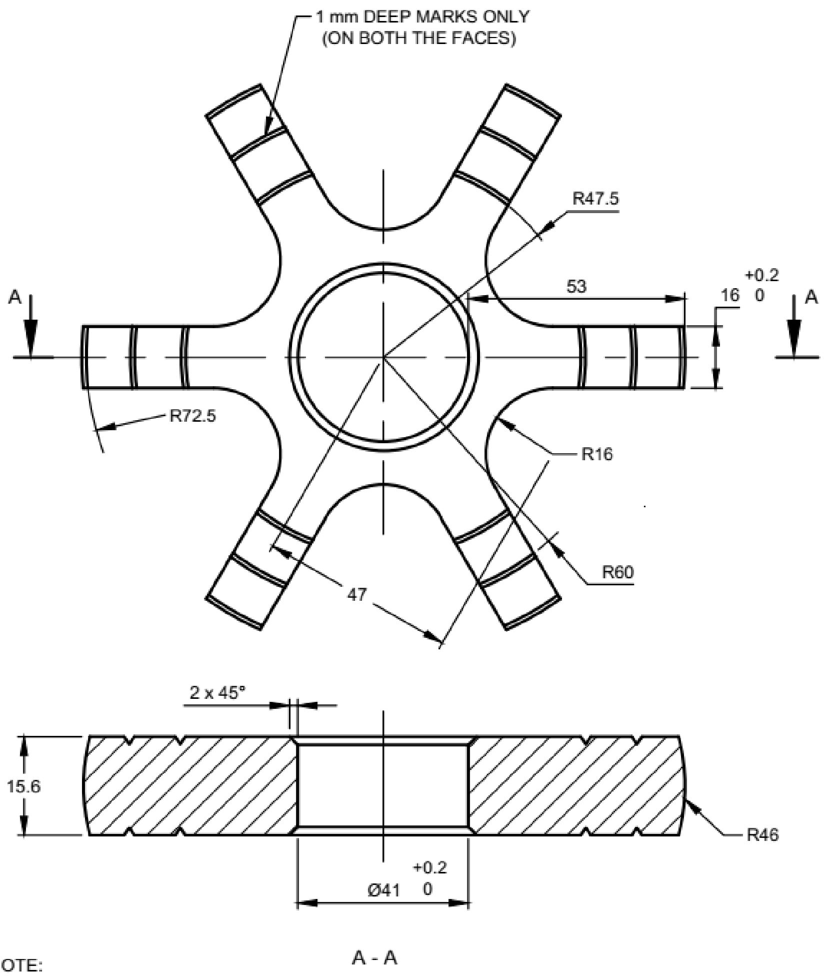
1. Only one centralizer to be provided resting against first pipe-joint from the top.
2. The above centralizer is suitable for 150 NB casing pipe. It may be trimed at R60 and R47.5 marks for use with casing pipe of 125 and 100 NB respectively.

SHORE HARDNESS 80^{+5}_{-4} ON SCALE A

Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres

FIG. 7.15 PIPE CENTRALIZER-VLOM 50



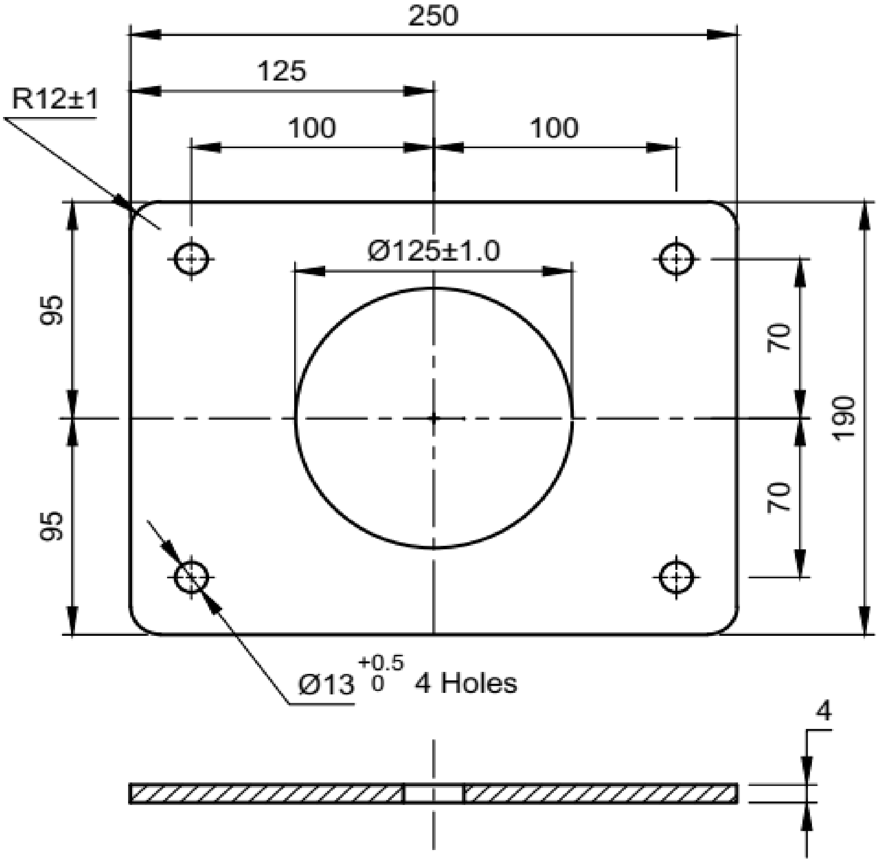
NOTE:

1. Minimum 3 centralizers should be provided, first at joint to top reducer cap of cylinder, second approximately at middle of riser pipe line and third at the bottom of top riser pipe.
2. The above centralizer is suitable for 150 NB casing pipe. It may be trimmed at R60 and R47.5 marks for use with casing pipe of 125 and 100 NB respectively.

SHORE HARDNESS 80 $^{+5}_{-4}$ ON SCALE A
Manufacturing tolerance to be ±0.5 unless otherwise specified

All dimensions in millimetres.

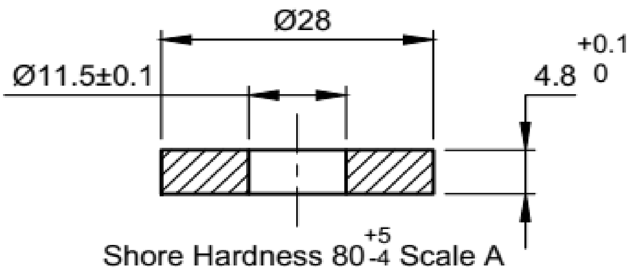
FIG. 7.16 PIPE CENTRALIZER-STANDARD (SDWP)



SHORE HARDNESS 80 $^{+5}_{-4}$ ON SCALE A

All dimensions in millimetres

FIG. 7.17 NITRILE RUBBER GASKET (FOR FLP)



Shore Hardness 80 $^{+5}_{-4}$ Scale A

1) Indicates critical dimensions

All dimensions in millimetres

FIG. 7.18 NITRILE RUBBER WASHER (FOR FLP)

Indian Standard

DEEPWELL HANDPUMPS, COMPONENTS AND SPECIAL TOOLS — SPECIFICATION

PART 8 SPECIAL TOOLS

1 SCOPE

1.1 This Indian Standard (Part 8) specifies the requirements of special tools for use in installation and maintenance of hand pumps covered in this standard.

1.2 The tools have been arranged in three groups:

a) Group 1 (Fig. **8.1.1** to **8.1.10**) — Tools common for all the handpumps;

b) Group 2 (Fig. **8.2.1** to **8.2.8**) — Tools specific to SDWP and EDWP; and

c) Group 3 (Fig. **8.3.1** to **8.3.7**) — Tools specific to VLOM-50, VLOM-65 and FLP.

1.3 The quantity of different tools, with the reference of their respective figures, comprising each set of special tools required for installation and/or maintenance of particular type of handpump is listed in Annex D.

1.4 Heavy-duty clamp and self-locking clamp covered in group 2 are suited up to 45 m depth application. Alternate pipe clamp arrangements may be used for application beyond 45 m.

1.5 This part shall be read with Part 1. Stipulations provided therein, whichever relevant to the special tools covered in this part shall apply.

2 NOMENCLATURE

2.1 Water Tank Lifter

Required for the handling of the water tank during assembly and dismantling of the pump.

2.2 Pipe Lifting Spanner

Required for lifting or lowering riser pipes.

2.3 Axle Punch

Required to drive the handle axle out of the head assembly.

2.4 Crank Spanner

Required for fastening of M 12 and M 10 bolts and nuts especially the chain bolt.

2.5 Connecting Rod Lifter

Required to facilitate lowering or lifting of the connecting rods.

2.6 Bearing Pressing Tool

Required for pressing the bearings in the bearing housing.

2.7 Chain Coupling Supporting Tool

Required to facilitate the disconnection of the chain from the handle.

2.8 Rod Coupler Spanner

Required for easy fitment of the connecting rods.

2.9 Heavy Duty Clamp

Required for clamping the riser pipe. It works on sliding jaw system.

2.10 Self-Locking Clamp

An alternate arrangement for clamping of the riser pipe. It grips the pipe as soon as its handle is released.

2.11 Connecting Rod Vice

Required to clamp the connecting rod.

2.12 Check Valve Puller

Required to facilitate extraction of the check valve in VLOM handpump.

2.13 Tool Box

A steel box to keep all above tools except the ones under serial **2.1, 2.2, 2.9** *and* **2.10**.

3 CONSTRUCTION

3.1 The constructional details of different tools covered in this part shall be as given in Fig. **8.1.1** to **8.1.10,** Fig. **8.2.1** to **8.2.8** and Fig. **8.3.1** to **8.3.7**.

3.2 The material and dimensions shall meet the related prerequisites given in **4** and **5** of Part 1.

3.3 The tool box shall be made of 1 mm nominal thick CRCA steel sheet (*see* IS 513), with the overall dimensions given below:

Length	440 mm
Width	320 mm
Height	110 mm

3.3.1 The hinged lid shall be provided with suitable arrangement for putting a lock.

4 ANTI-CORROSIVE TREATMENT

4.1 Electro-galvanizing

Unless otherwise specified, all the tools and components thereof, except the axle pin (Fig. 8.2.7 C) and the spring (Fig. 8.2.7 F), shall be electroplated as per service grade No. 3 of IS 1573 and passivated in accordance with IS 9839. Bolts and nuts shall be electroplated in conformance with IS 1367 (Part 11).

4.2 Painting

4.2.1 All the internal surfaces where electro-galvanizing is not possible shall be protected with a coat of red oxide primer conforming to IS 2074.

4.2.2 The box shall be given the following anti corrosive treatment:

a) One coat of red oxide primer conforming to IS 2074.
b) Two coats of synthetic enamel paint conforming to IS 2932.

5 TESTING

5.1 For the purpose of testing, group of each type of tool covered in this part shall be treated as a separate lot.

5.2 Test samples shall be drawn as per procedure described in **9.3** of Part 1.

5.3 The tools selected as per **5.2** shall be subjected to the following checks:

5.3.1 All the tools shall be examined for finish, workmanship and visual defects.

5.3.2 The base plates of the clamps and/or vice shall be reasonably flat to provide proper matching of holes to ensure unrestricted insertion of bolts when fitted on respective flanges of the handpump.

5.3.3 The movement of the screws of the heavy duty clamp and the connecting rod vice shall be easy without undue slackness or resistance throughout the opening. Proper alignment of their jaws shall be ensured.

5.3.4 *In case of the Self-locking Clamp*

a) The jaws shall have free movement when operated with handle and shall close instantly when handle is released;
b) The handle shall not have excessive play both in vertical and horizontal direction when checked before application of force to open the jaws;
c) The jaws should be properly aligned to provide proper and firm gripping of the pipe; and
d) One clamp, after fixing suitably, shall be operated at least 100 times. The difference in length of the spring measured before and after the test shall not be more than 0.5 mm.

5.3.5 *Incase of the Connecting Rod Vice*

a) The gap between the locking block and the fixed block to be checked for dimension. It shall be centrally placed with respect to the slot in the base plate, and
b) The lock plate shall have free movement.

5.3.6 Two samples out of the batch selected shall be checked for dimensional and other requirements given in respective figures.

5.3.6.1 In case of assembly, all the components shall be dismantled and tested likewise.

5.3.7 *Clamping Test*

5.3.7.1 For the testing of the heavy duty clamp and the self-locking clamp, a solid or hollow mandrel of suitable length having following outer diameter and smooth surface shall be gripped in the jaws. An axial load of 500 kgf shall be applied on the mandrel by suitable arrangement. The mandrel shall not slip.

5.3.7.1.1 *Mandrel size*

For 32 mm pipe clamp: 42 mm outer dia.

For 50 mm pipe clamp: 60 mm outer dia.

For 65 mm pipe clamp: 75 mm outer dia.

5.3.7.2 A similar test shall be done on the connecting rod vice by using 12 mm diameter drawn bar and a load of 200 kgf. There shall be no slippage of the bar.

5.4 Criteria for Conformity

5.4.1 The individual lot of components as defined in **5.1** shall be considered conforming to the requirements of the standard, if the batch for the particular lot selected according to **5.2** satisfies the requirements given in **5.4.2**.

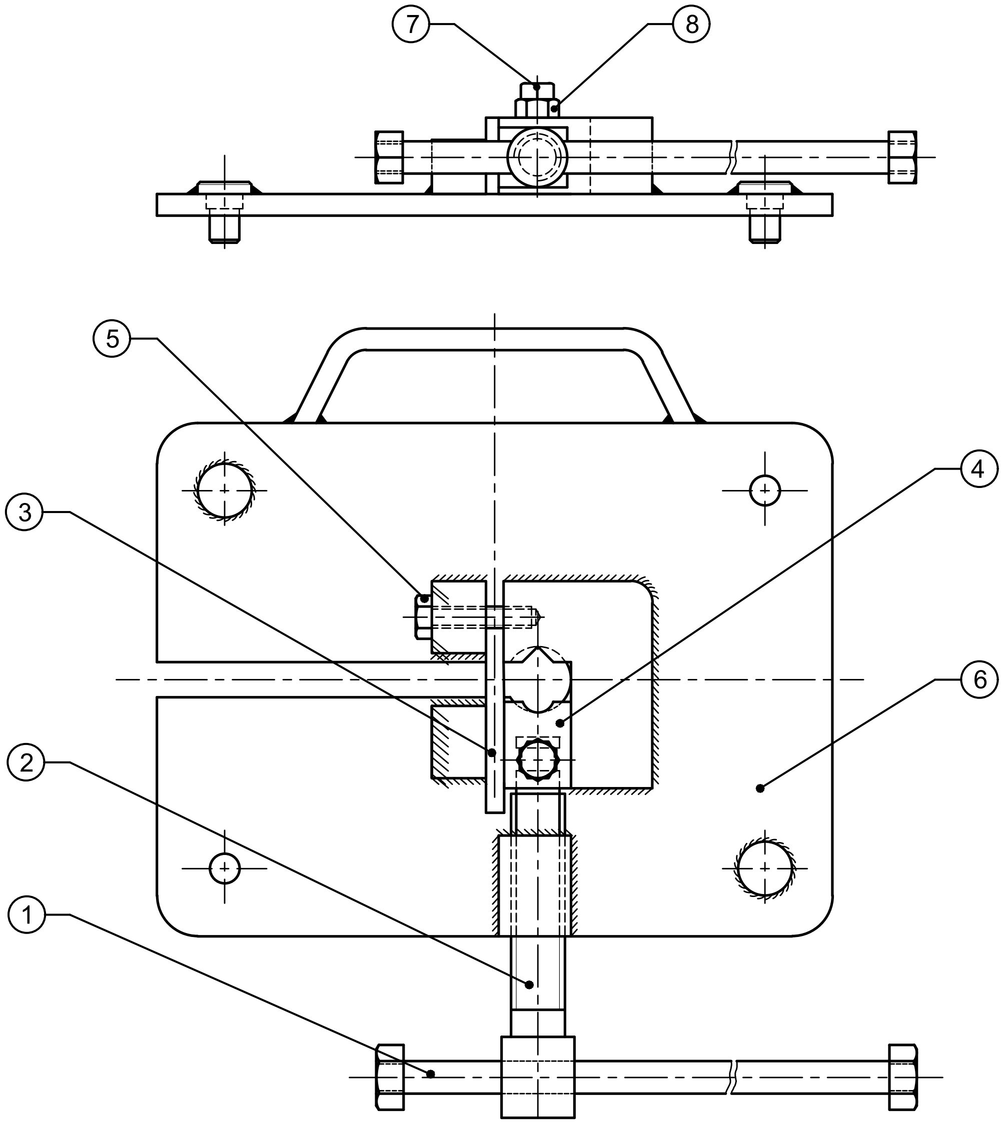
5.4.2 The number of tools not meeting the requirements of the characteristics inspected under **5.3** does not exceed the corresponding acceptance number as specified in IS 2500 (Part 1).

6 MARKING

Each tool shall have clear and legible steel punch impression of manufacturer’s identification mark.

7 PACKING

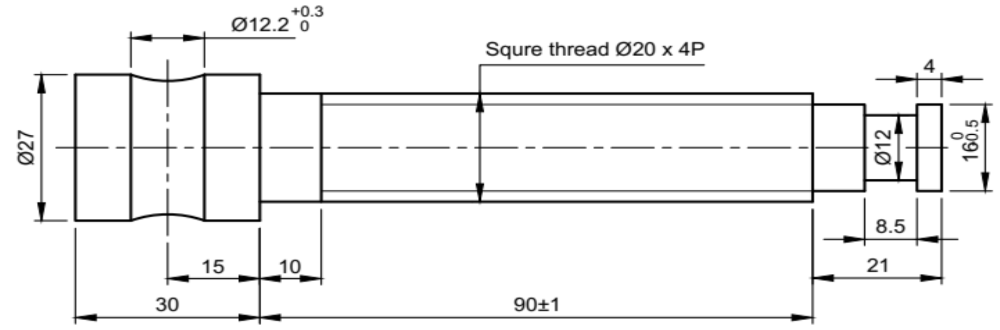
As agreed between the supplier and the purchaser.



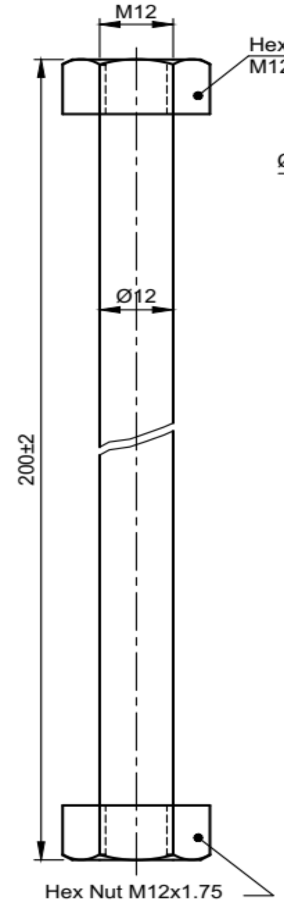
8	1	Locking Nut M8	Std 02	Steel	IS 1363 (Part 3)
7	1	Hex. Bolt M8 x 20	Std 06	Steel	IS 1363 (Part 1)
6	1	Rod Vice Base Assembly	Fig 8.1.2F	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Special Bolt M8 x 40	Fig 8.1.2E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Movable Jaw	Fig 8.1.2D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Locking Plate	Fig 8.1.2C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Threaded Shaft	Fig 8.1.2B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Handle	Fig 8.1.2A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

All dimensions in millimetres

FIG. 8.1.1 CONNECTING ROD VICE

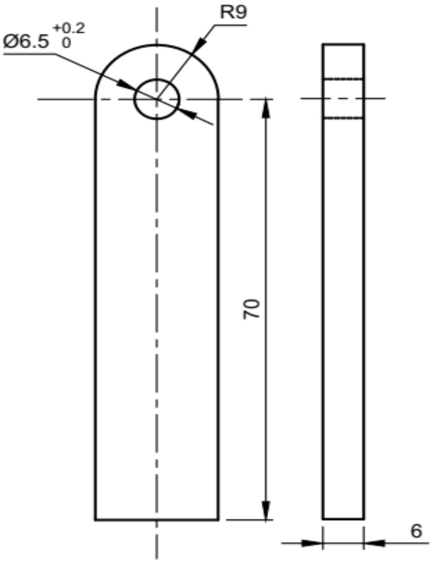


8.1.2B THREADED SHAFT

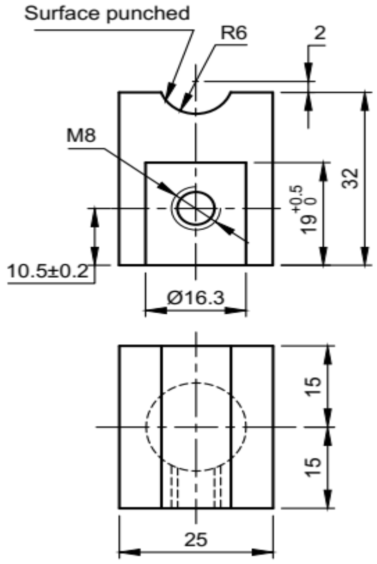


Seal weld nut at one end and
other end punch locked after
tightening the nut fully when
assembled in vice.

8.1.2A HANDLE

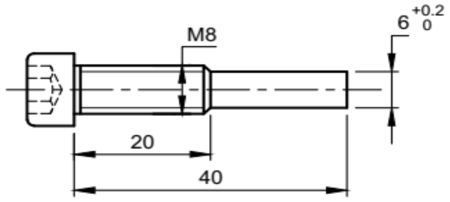


8.1.2C LOCKING PLATE



Carburise and hardened
to 40 to 45 HRC

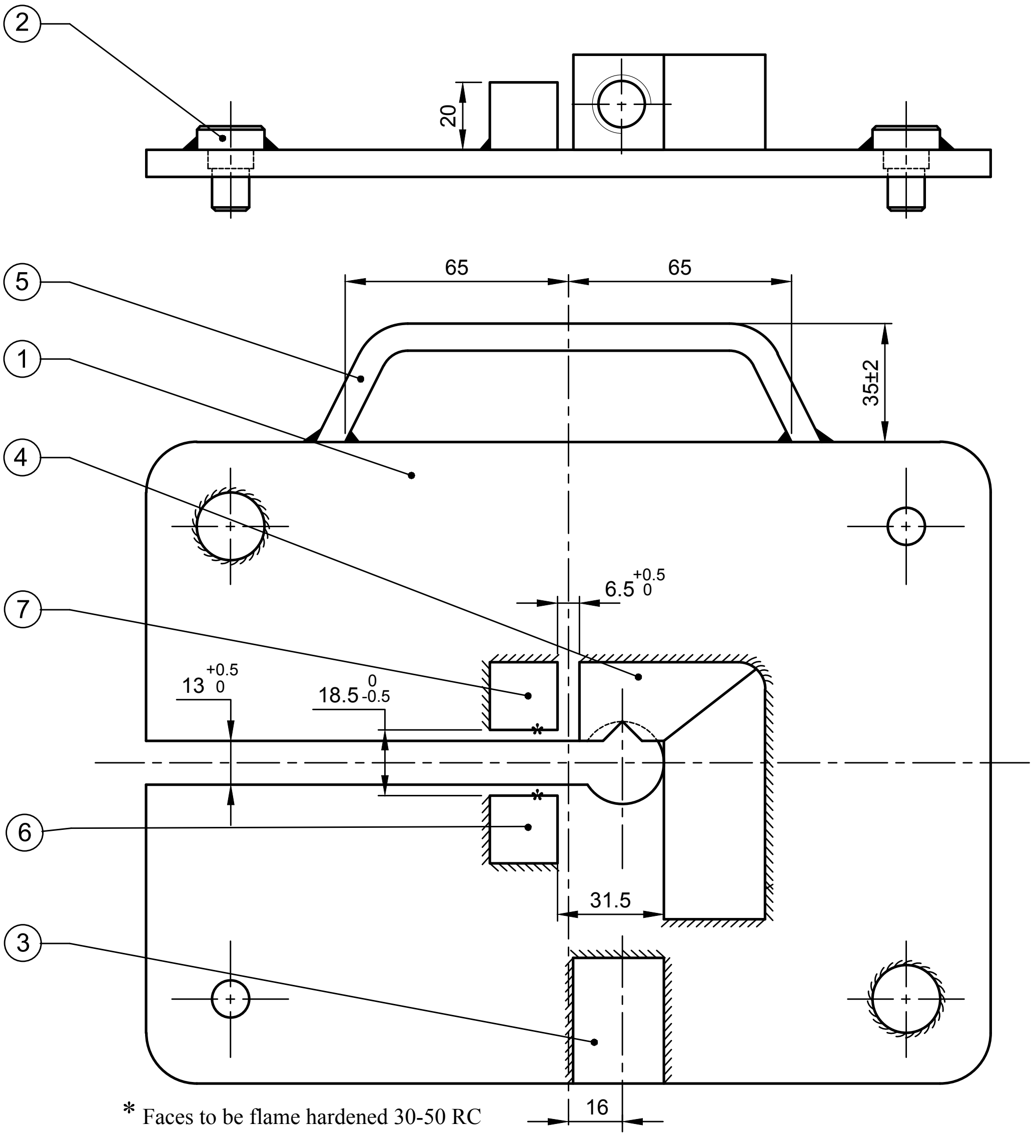
8.1.2D MOVABLE JAW



8.1.2E SPECIAL BOLT

All dimensions in millimetres

FIG. 8.1.2 ROD VICE PARTS (*Continued*)



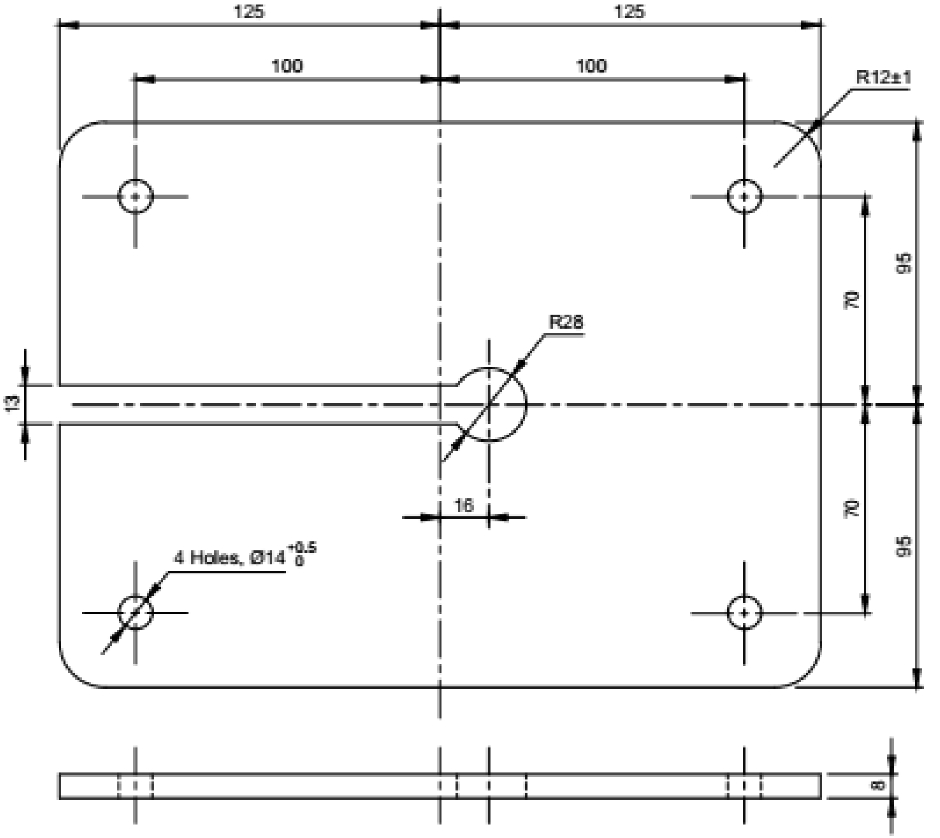
* Faces to be flame hardened 30-50 RC

Part No.	No. Off	Description	Reference	Material	
7	1	Locking Block	Fig 8.1.3G	Mild Steel	Quality A of Grade E 250 of IS 2062
6	1	Fixed Block	Fig 8.1.3F	Mild Steel	Quality A of Grade E 250 of IS 2062
5	1	Carrying Handle	Fig 8.1.3E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Supporting Block	Fig 8.1.3D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Fixed Nut	Fig 8.1.3C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	2	Base Plate Lug	Fig 8.1.3B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Base Plate	Fig 8.1.3A	Mild Steel	Quality A of Grade E 250 of IS 2062

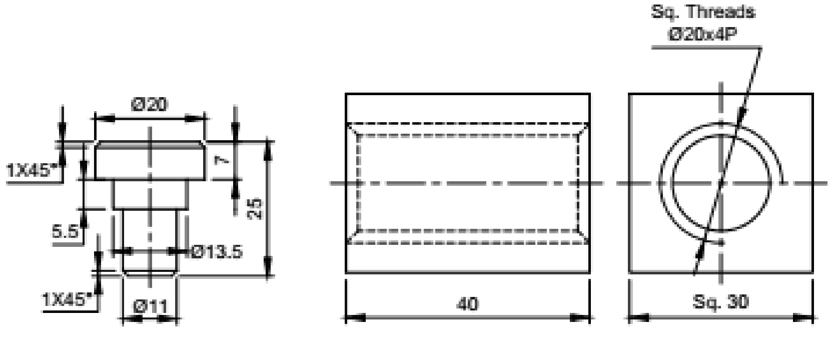
8.1.2F ROD VICE BASE ASSEMBLY

All dimensions in millimetres

FIG. 8.1.2 ROD VICE PARTS (*Concluded*)



8.1.3A BASE PLATE

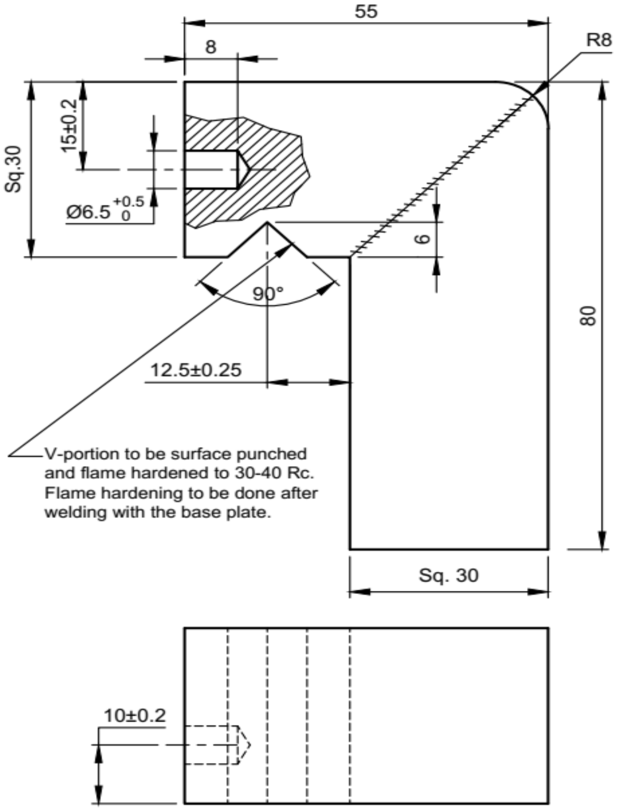


8.1.3B BASE PLATE LUG

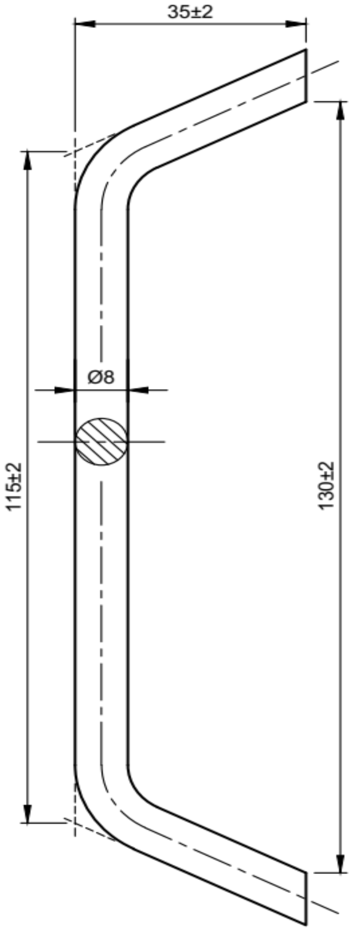
8.1.3C FIXED NUT

ALL DIMENSIONS IN MILLIMETRES

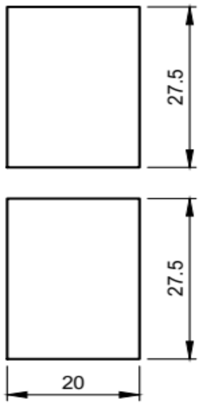
FIG. 8.1.3 ROD VICE BASE ASSEMBLY PARTS (*Continued*)


55
8
R8
15±0.2
Sq.30
Ø6.5 +0.5 0
6
90°
80
12.5±0.25
V-portion to be surface punched and flame hardened to 30-40 Rc. Flame hardening to be done after welding with the base plate.
Sq. 30
10±0.2

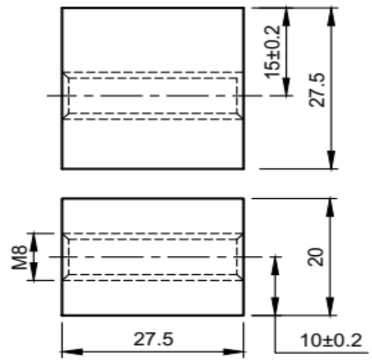
8.1.3D SUPPORTING BLOCK



8.1.3E CARRYING HANDLE



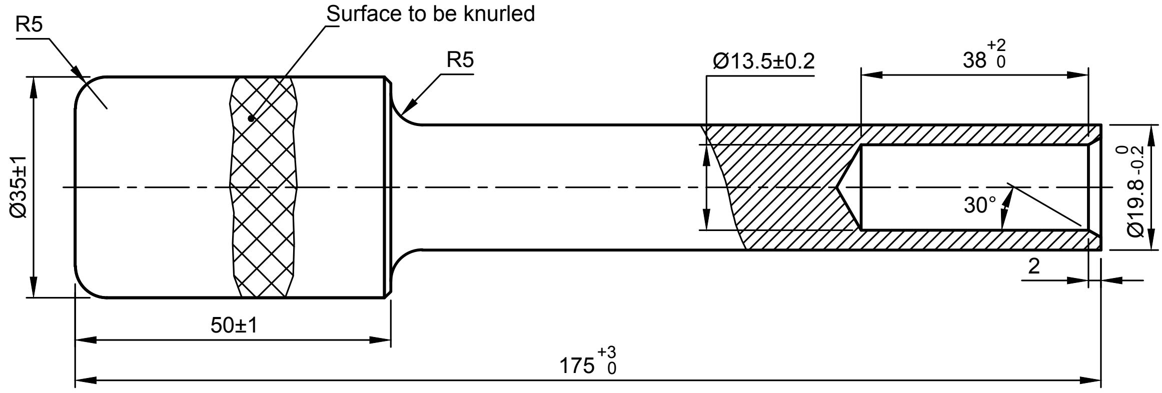
8.1.3F FIXED BLOCK



8.1.3G LOCKING BLOCK

All dimensions in millimetres

FIG. 8.1.3 ROD VICE BASE ASSEMBLY PARTS (*Concluded*)

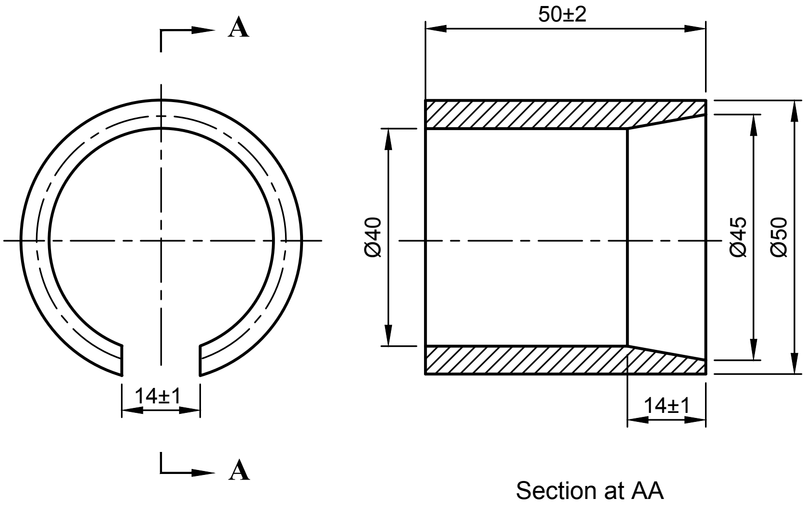


1	1	Axle Punch	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

Carburised and hardened to 30-40 HRC

All dimensions in millilitres

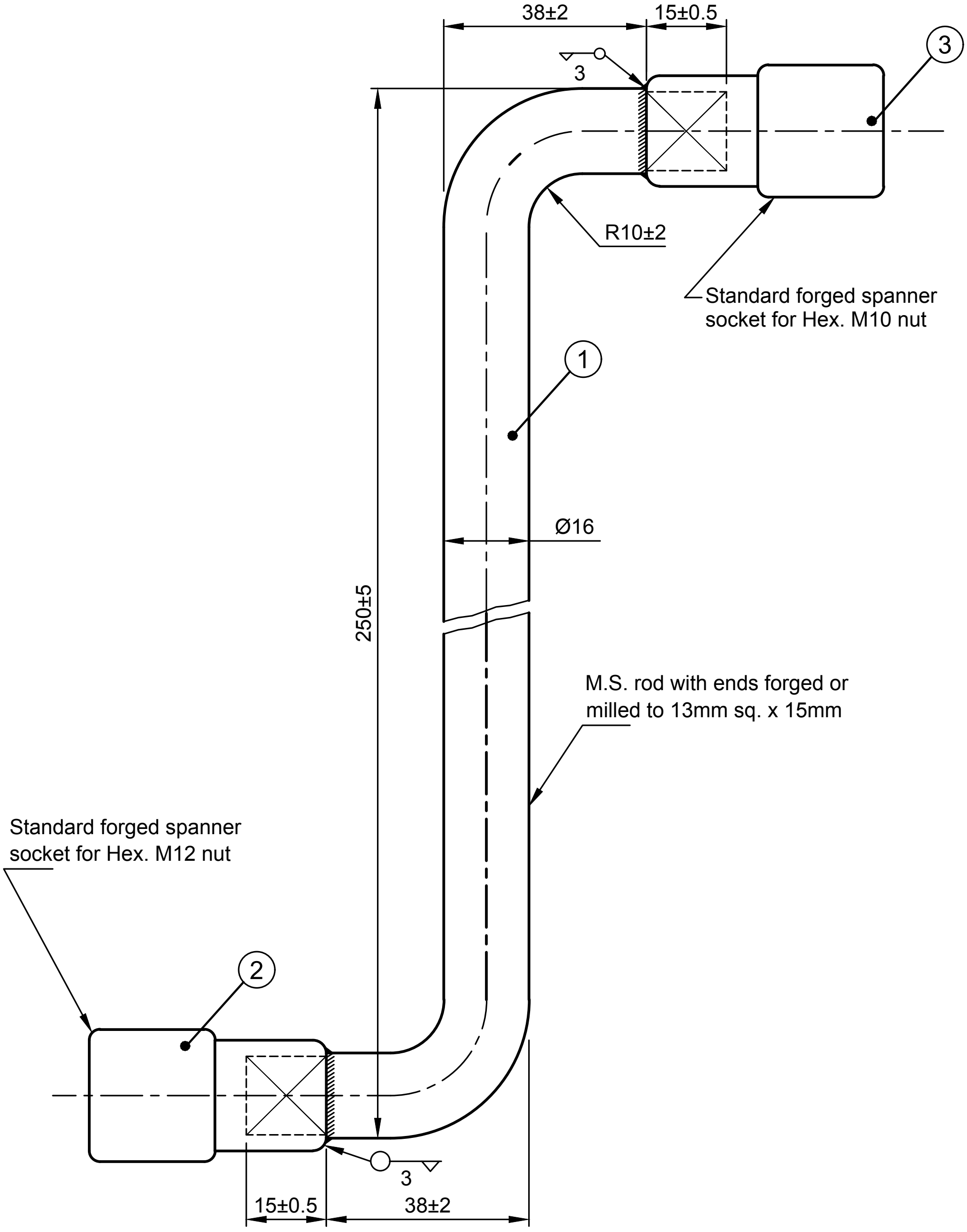
FIG. 8.1.4 AXLE PUNCH



1	1	Chain coupler supporting tool	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millilitres

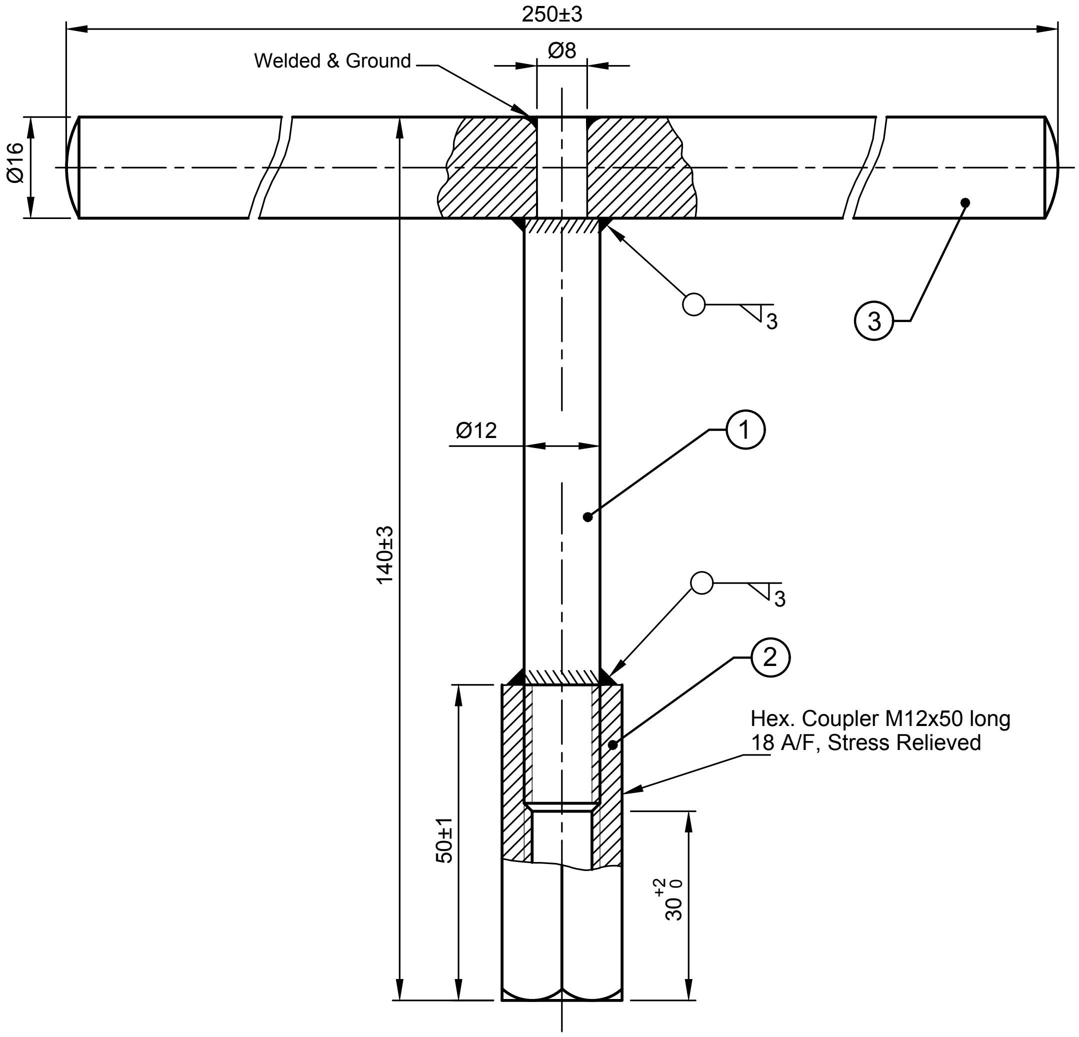
FIG. 8.1.5 CHAIN COUPLER SUPPORTING TOOL


38±2
15±0.5
3
3
R10±2
Standard forged spanner socket for Hex. M10 nut
1
Ø16
250±5
M.S. rod with ends forged or milled to 13mm sq. x 15mm
Standard forged spanner socket for Hex. M12 nut
2
3
15±0.5
38±2

3	1	Socket spanner (M10)	Steel	IS 2030
2	1	Socket Spanner (M12)	Steel	IS 2030
1	1	Rod	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions are in millimetres

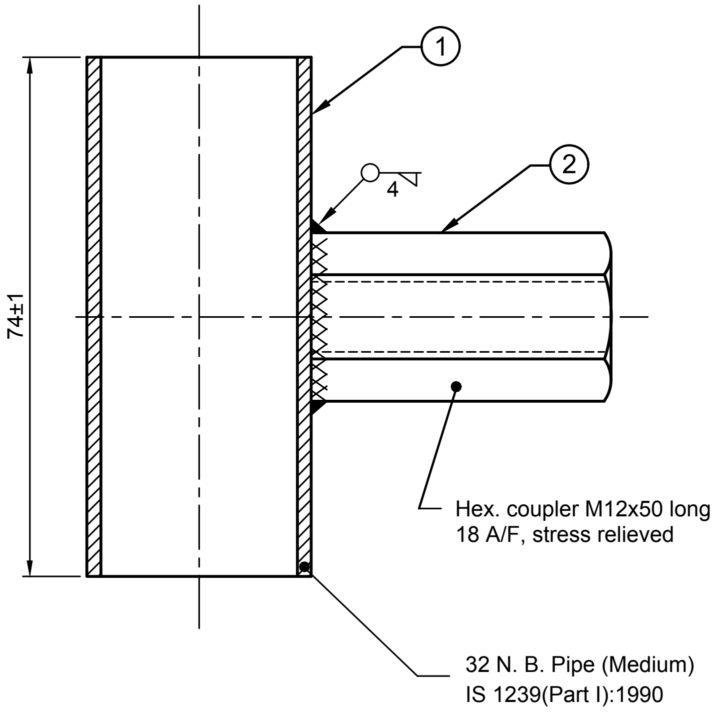
Fig. 8.1.6 Crank Spanner



3	1	T- Rod	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Hexagonal Coupler	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Rod	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millimetres

FIG. 8.1.7 CONNECTING ROD LIFTER

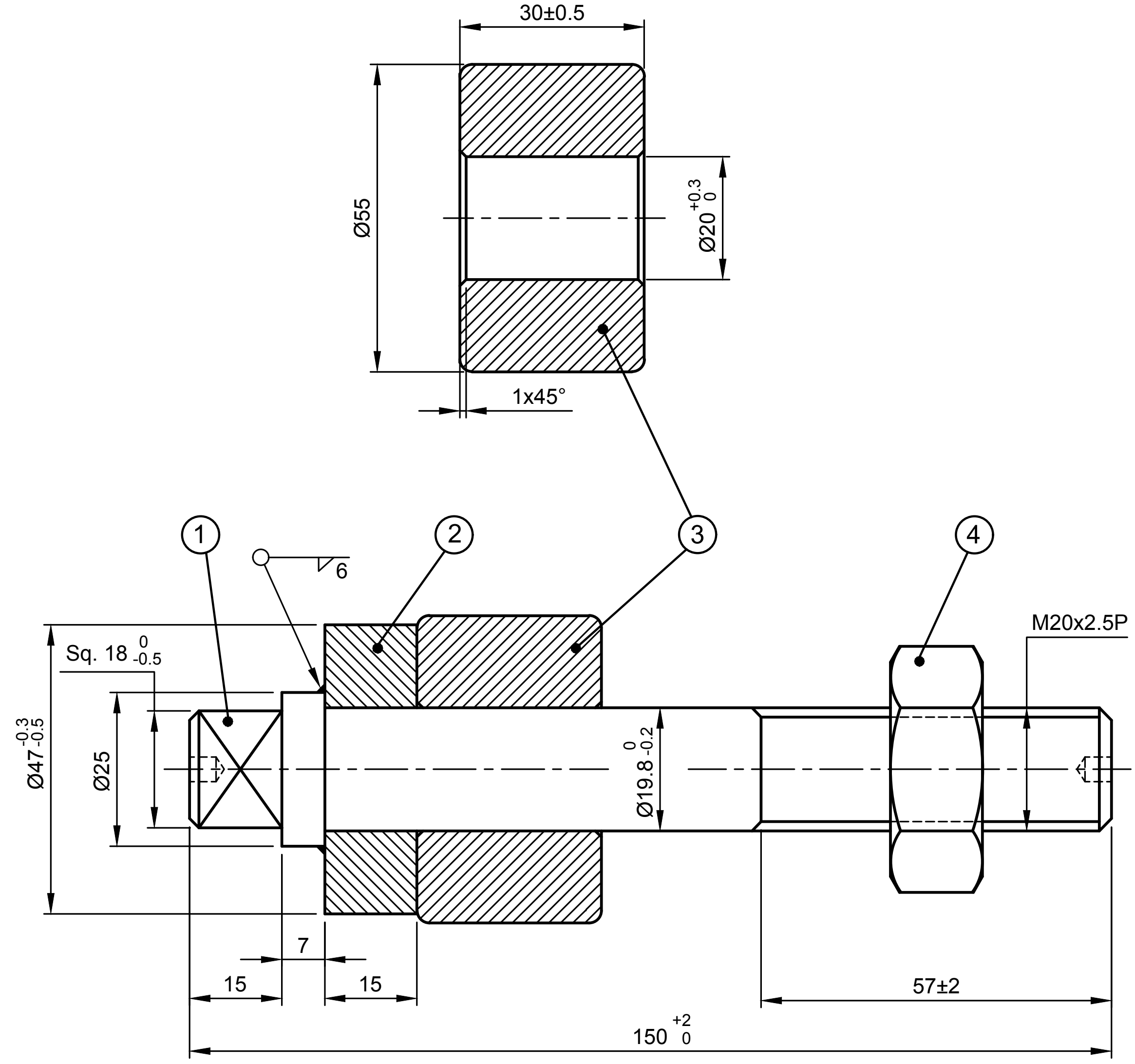


2	1	Hexagonal Coupler	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Pipe	Mild Steel	IS 1239 (Part 1)
Part No.	**No. Off**	**Description**	**Material**	

NOTE: Inside surface of pipe shall be protected with Red Oxide Primer

All dimensions in millimetres

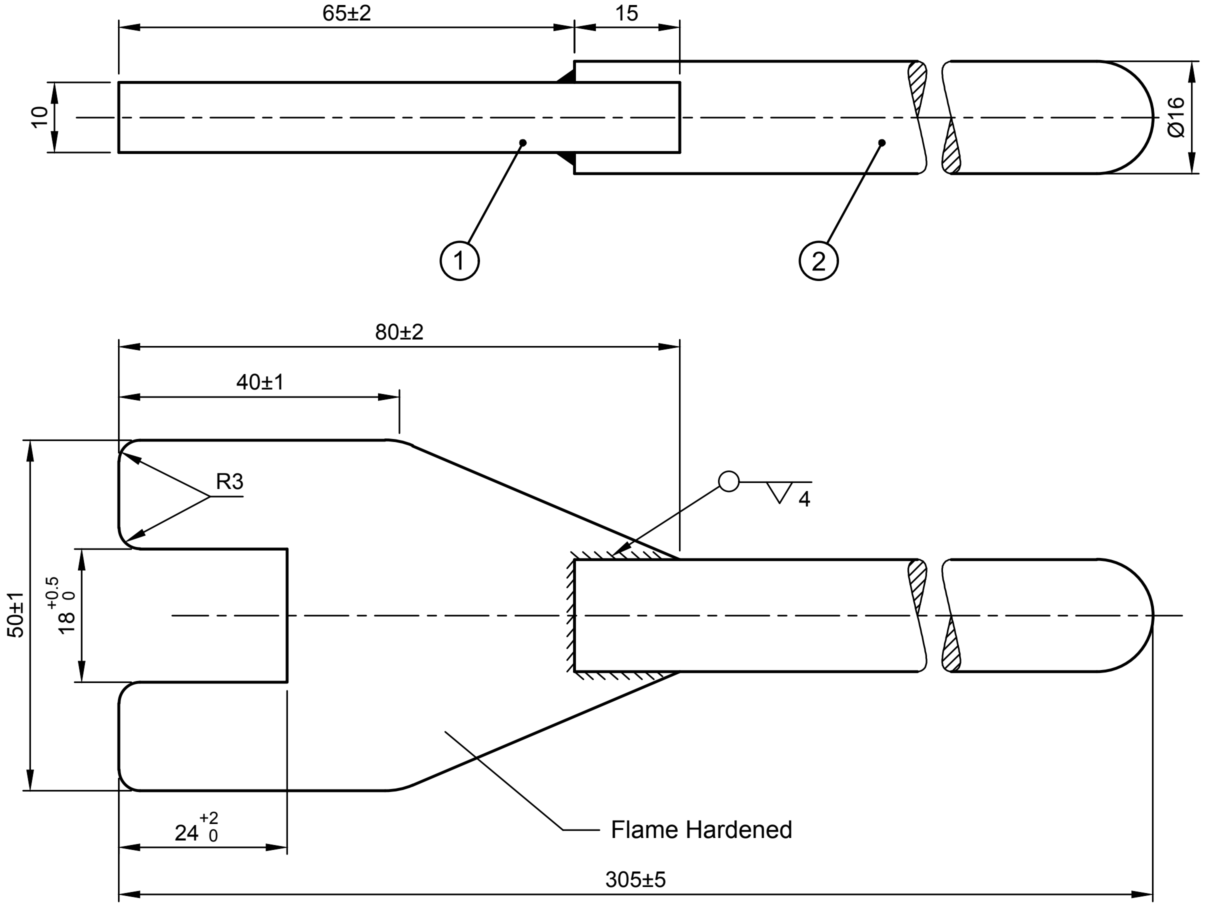
Fig. 8.1.8 Connecting ROD Lifter (Alternate Design)



4	1	Hex. Nut, M20 x 2.5	Steel	IS 1363 (Part 3)
3	1	Spacer	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Fixed Coupler	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Shaft	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millimetres

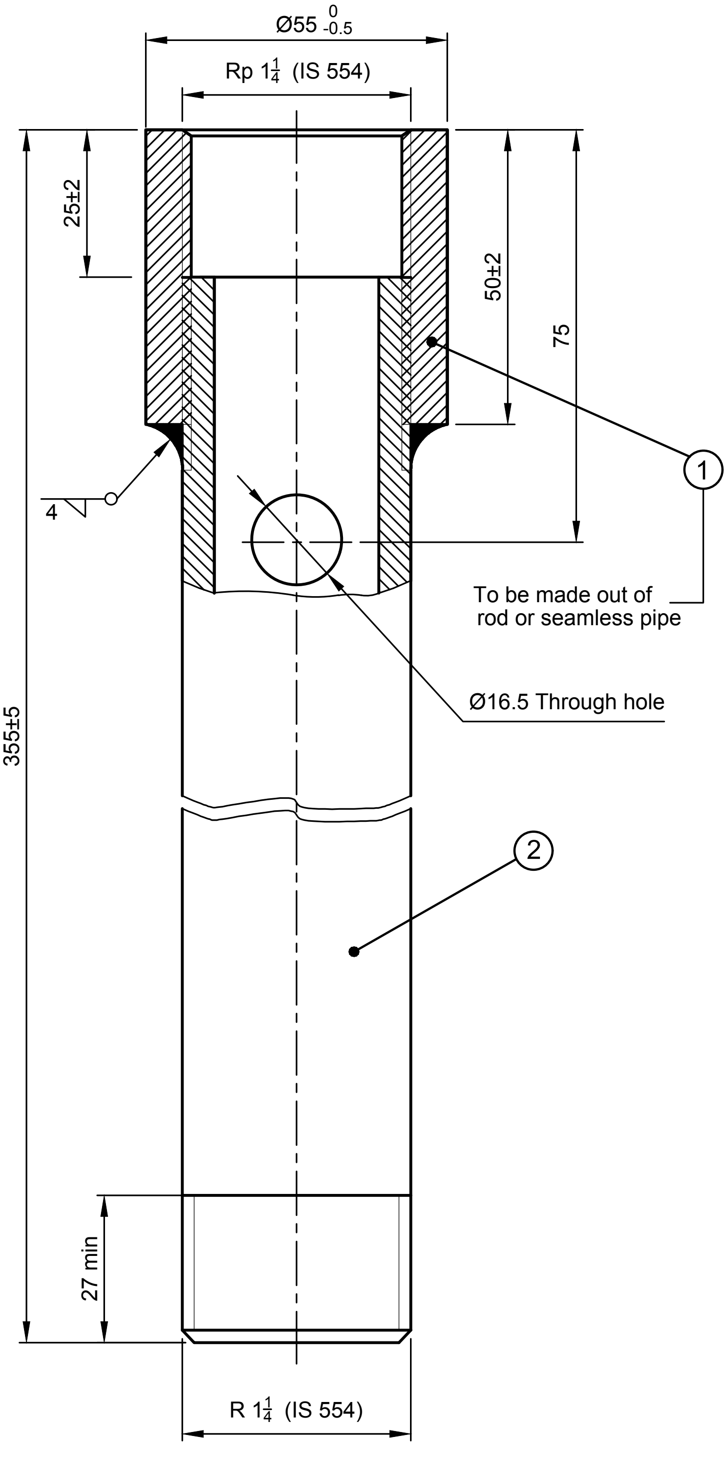
FIG. 8.1.9 BEARING PRESSING TOOL



2	1	Rod	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Plate	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions are in millimetres

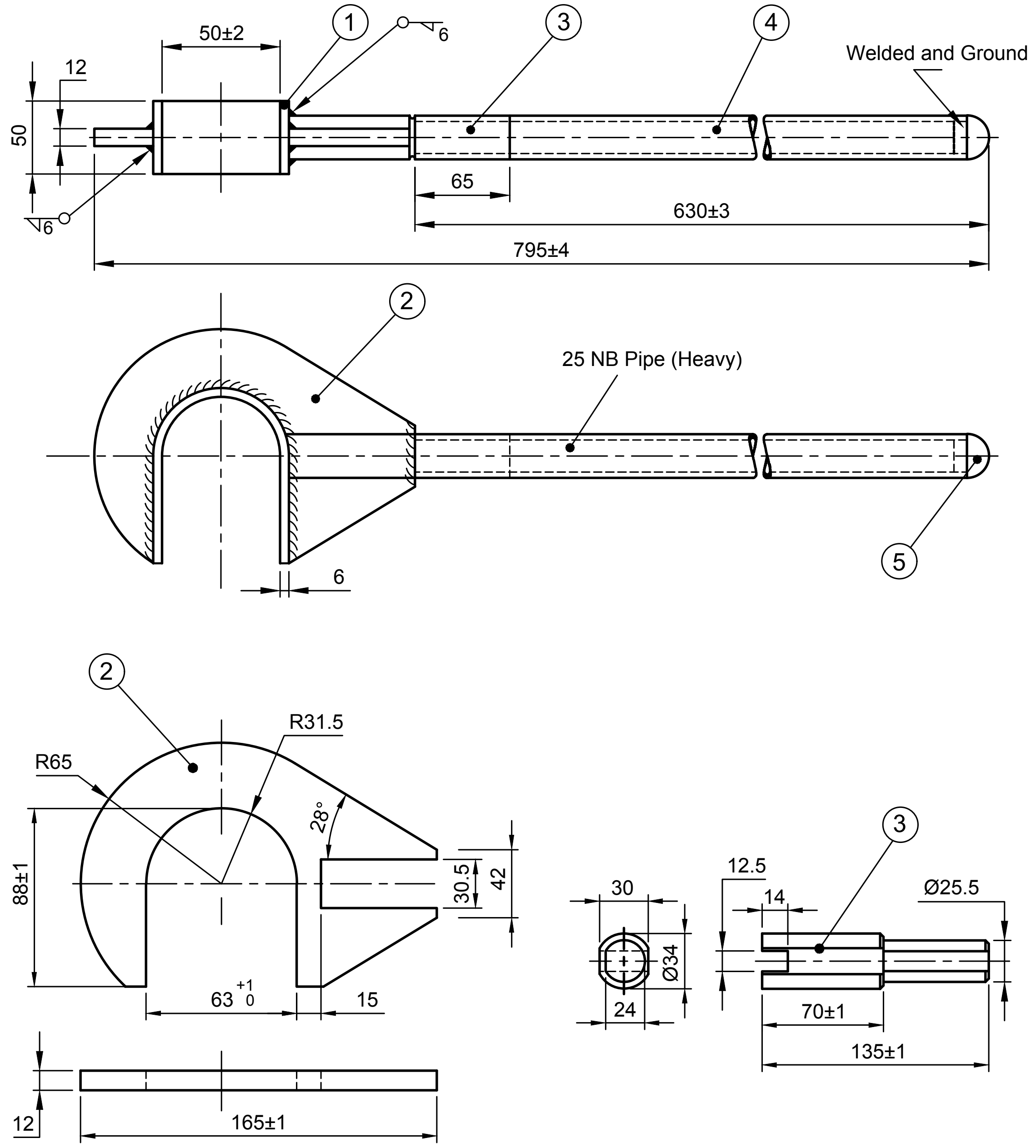
FIG. 8.1.10 ROD COUPLER SPANNER



2	1	Pipe, 32 NB	Steel	IS 1239 (Part 1) - medium
1	1	Pipe Coupler	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millimetres

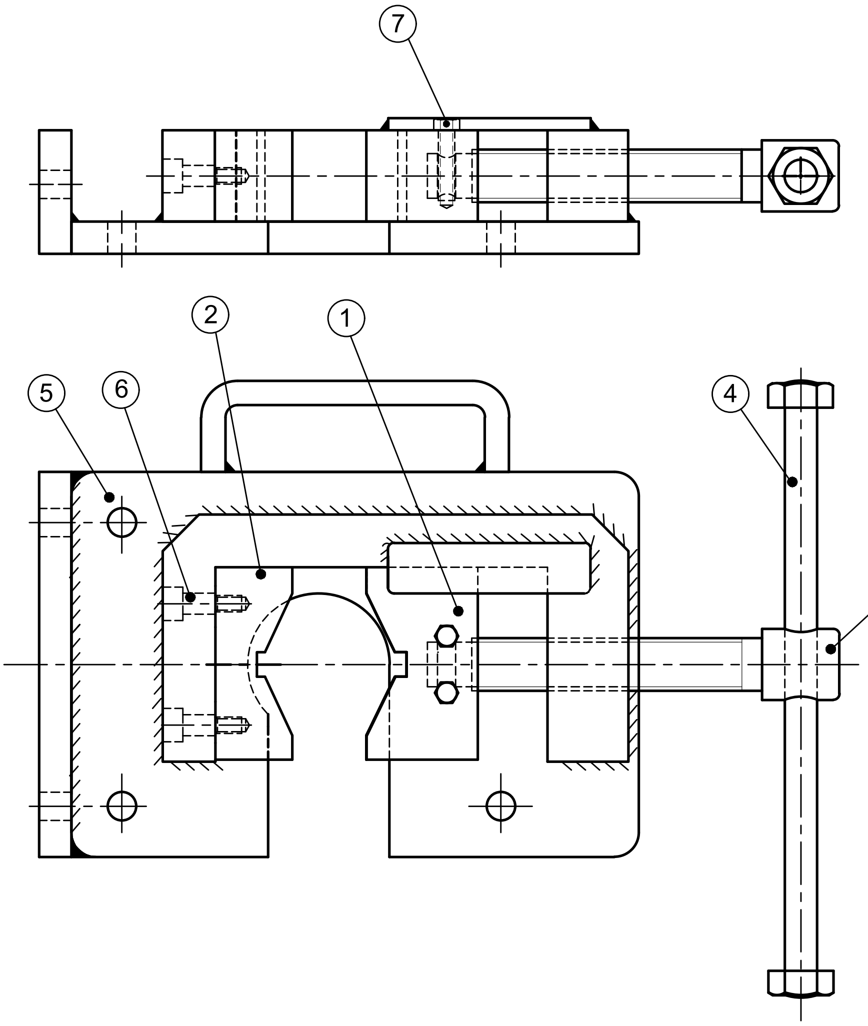
FIG. 8.2.1 WATER TANK LIFTER



5	1	End Plug	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Pipe, 25 NB	Mild Steel	IS 1239 (Part 1), heavy
3	1	Split Rod	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Hook Plate	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	`U' Plate	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millimetres

FIG. 8.2.2 PIPE LIFTING SPANNER

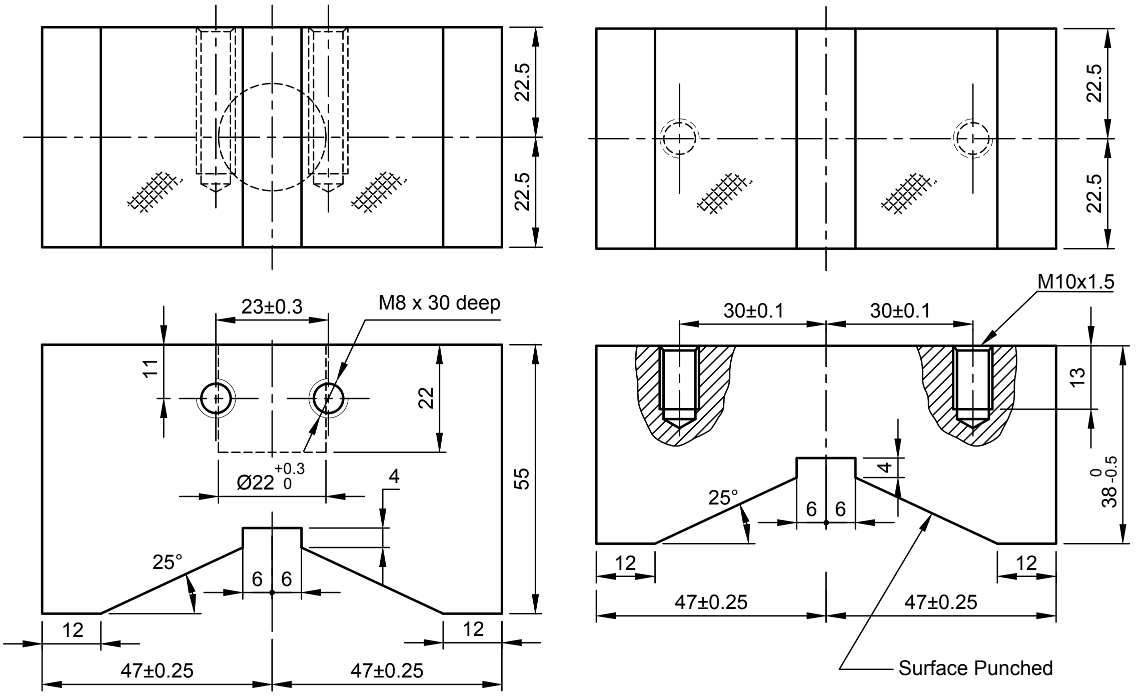


7	2	Hex. Bolt M8 X 30	Std 07	Steel	IS 1363 (Part 1)
6	2	Hexagon Socket Head Cap screw M10x25	Std 08	Steel	IS 2269
5	1	Clamp Base Assembly	Fig 8.2.4E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Handle	Fig 8.2.4D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Threaded Shaft	Fig 8.2.4C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Fixed Jaw	Fig 8.2.4B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Movable jaw	Fig 8.2.4A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: This clamp is suited upto 45 m depth application. Alternative pipe clamp arrangements may be used for application beyond 45 m.

All dimensions in millimetres

FIG. 8.2.3 HEAVY DUTY CLAMP

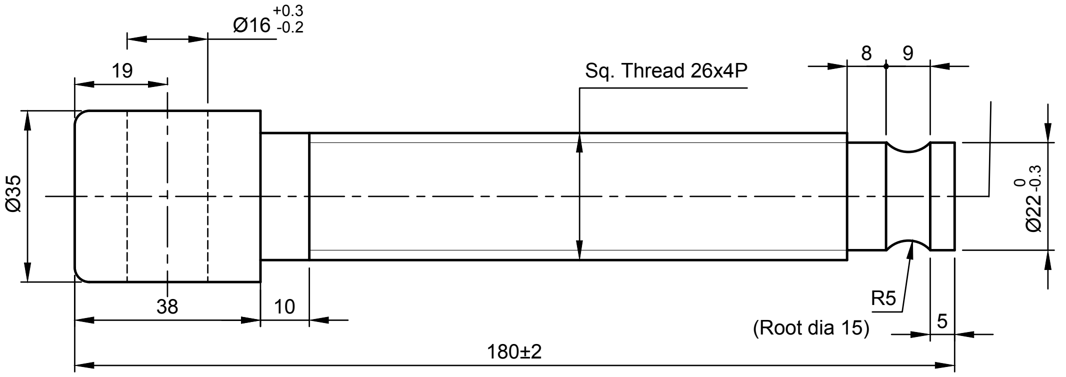


Carburised and hardened to 40-45 hrc.

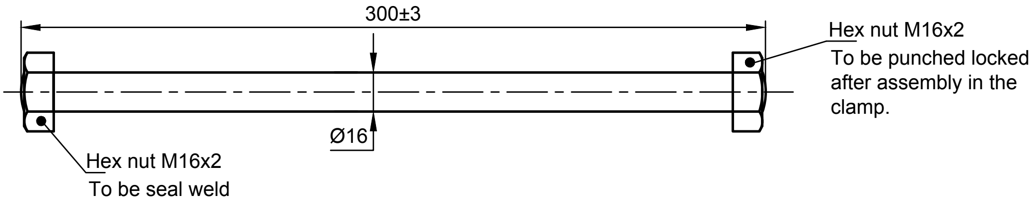
8.2.4A MOVABLE JAW

Carburised and hardened to 40-45 HRC

8.2.4B FIXED JAW



8.2.4C THREADED SHAFT



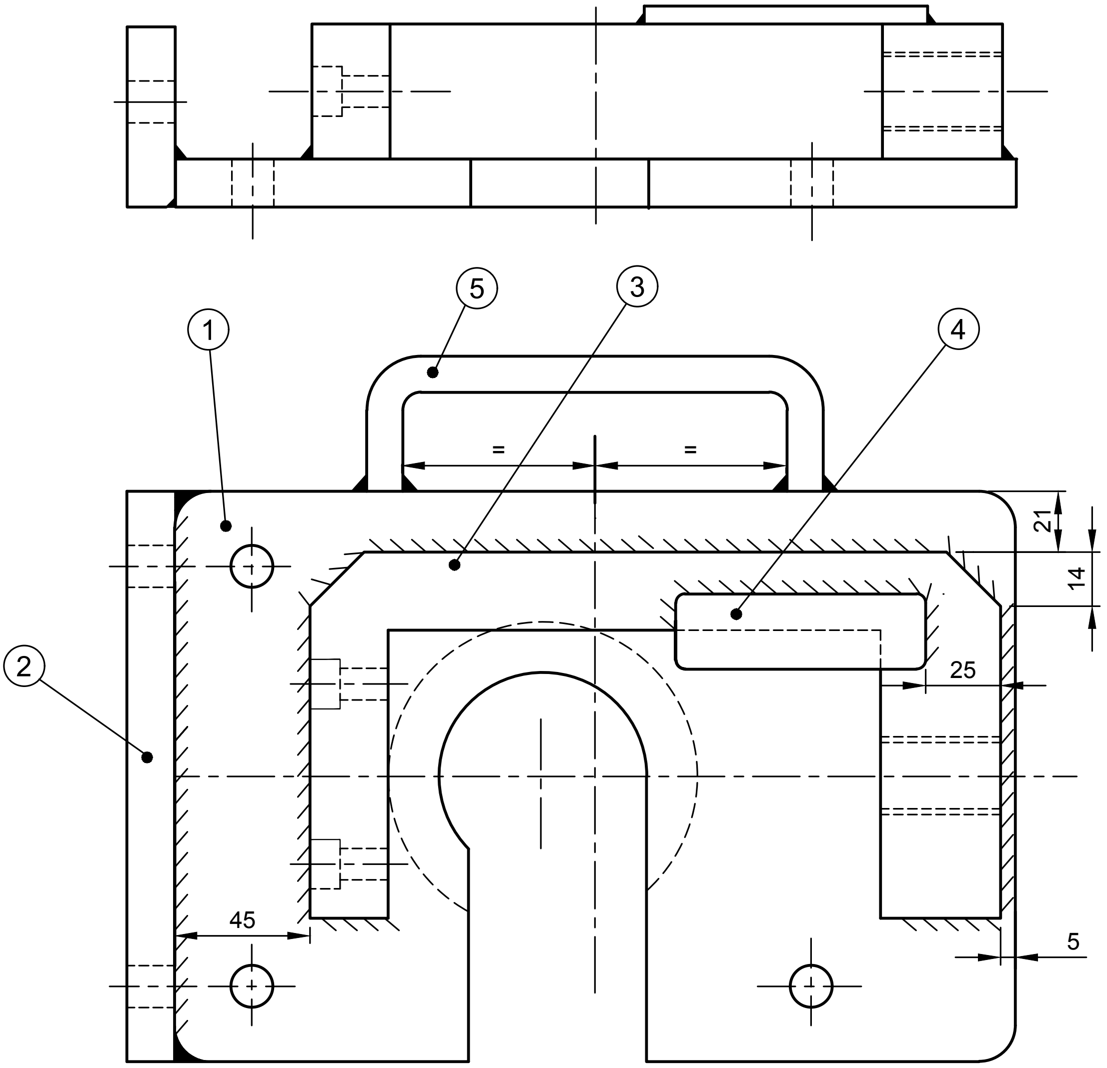
Hex nut M16x2
To be punched locked after assembly in the clamp.

Hex nut M16x2
To be seal weld

8.2.4D HANDLE

All dimensions in millimetres

FIG. 8.2.4 HEAVY DUTY CLAMP PARTS (*Continued*)



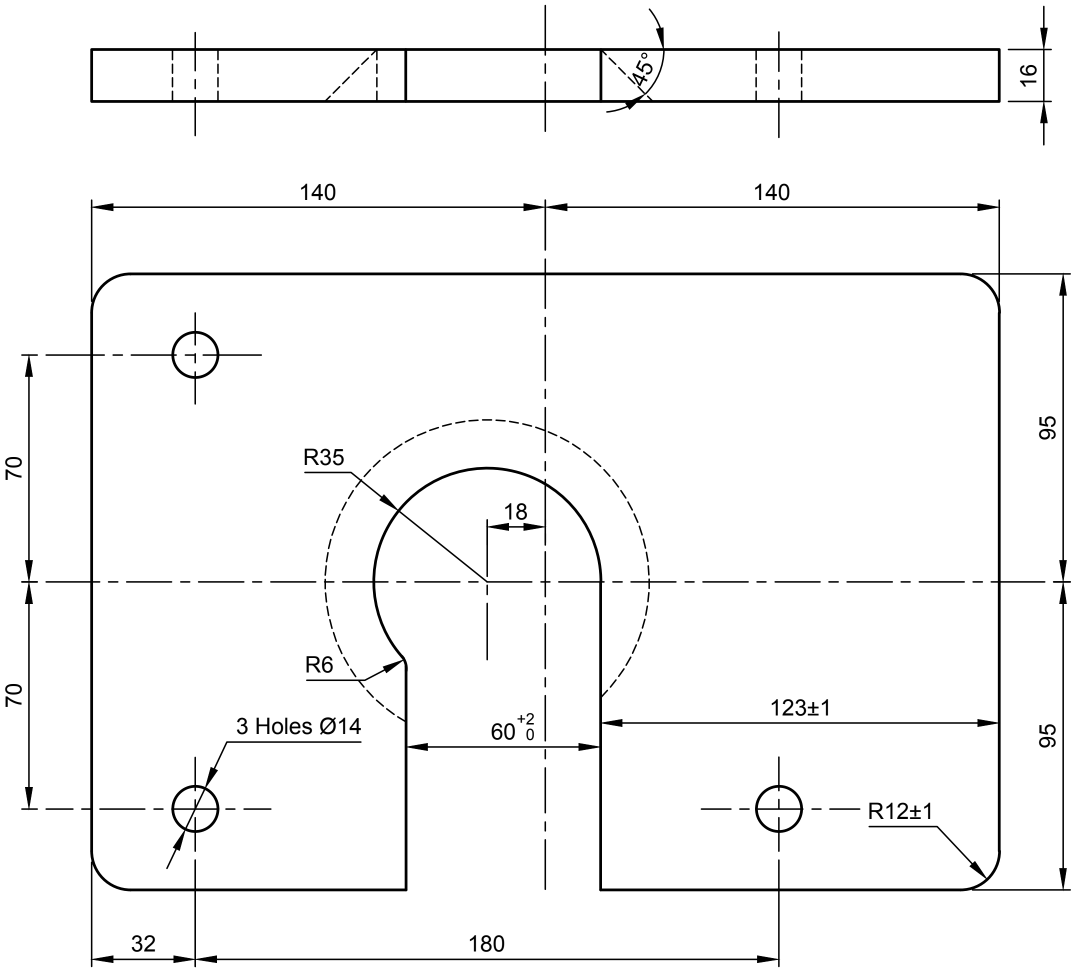
Part No.	No. Off	Description	Reference	Material	
5	1	Carrying Handle	Fig 8.2.5E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Guide Plate	Fig 8.2.5D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Supporting Block	Fig 8.2.5C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Side Plate	Fig 8.2.5B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Base Plate	Fig 8.2.5A	Mild Steel	Quality A of Grade E 250 of IS 2062

8.2.4E CLAMP BASE ASSEMBLY

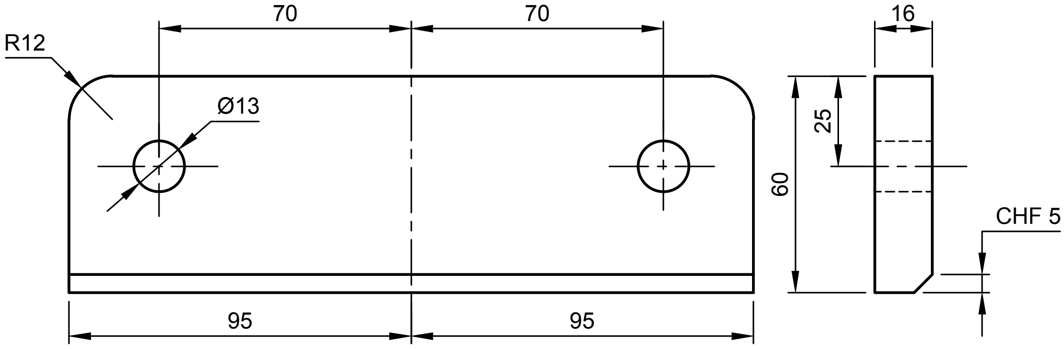
All dimensions in millimetres

FIG. 8.2.4 HEAVY DUTY CLAMP PARTS

FIG. 8.2.4 HEAVY DUTY CLAMP PARTS (*Concluded*)



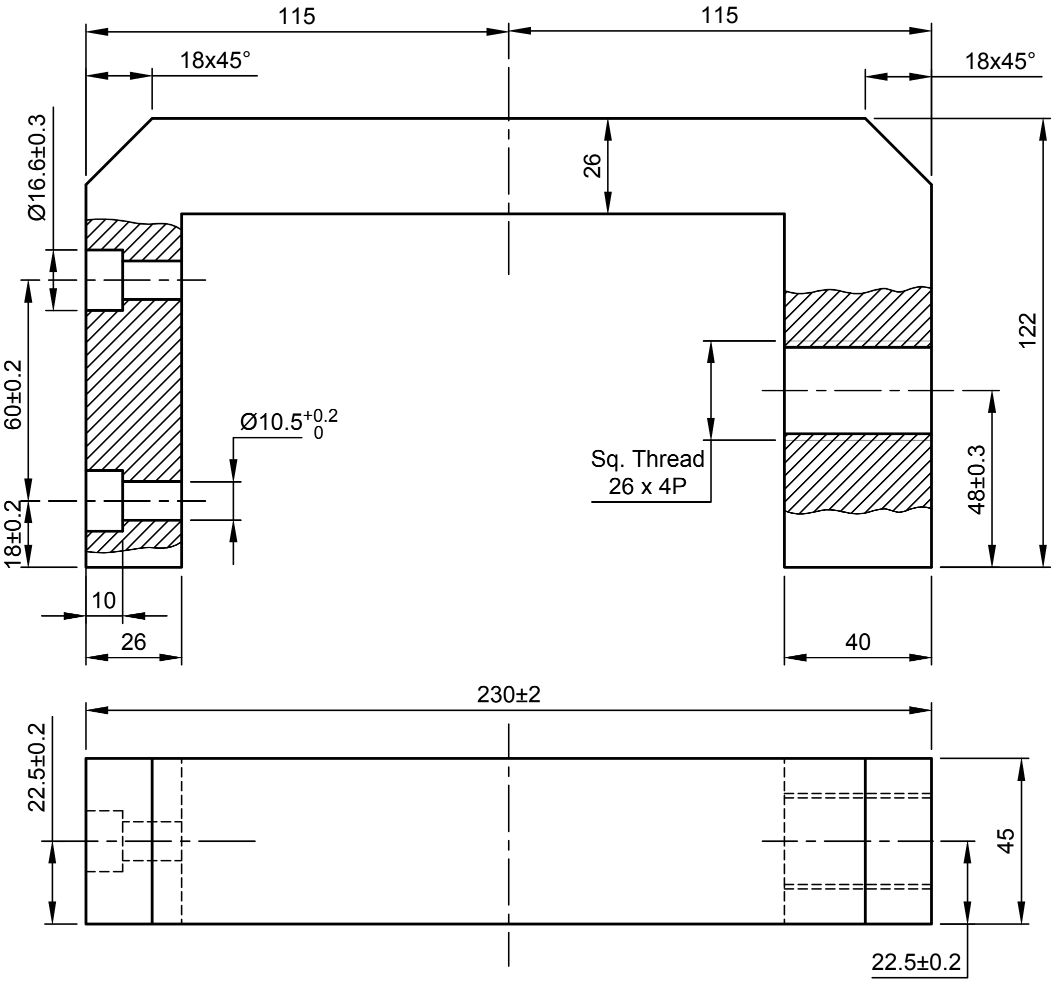
8.2.5A BASE PLATE



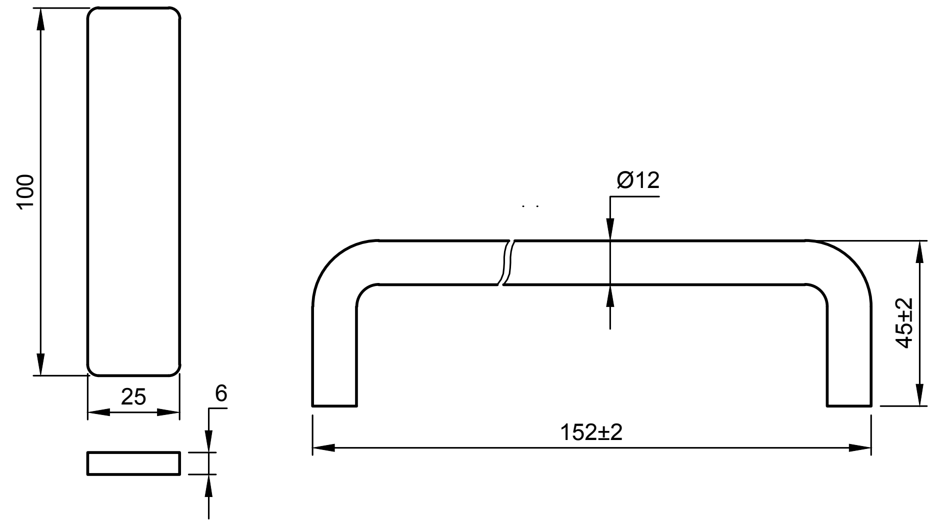
8.2.5B SIDE PLATE

All dimensions in millimetres

FIG. 8.2.5 HEAVY BASE ASSEMBLY PARTS (*Continued*)



8.2.5C SUPPORTING BLOCK

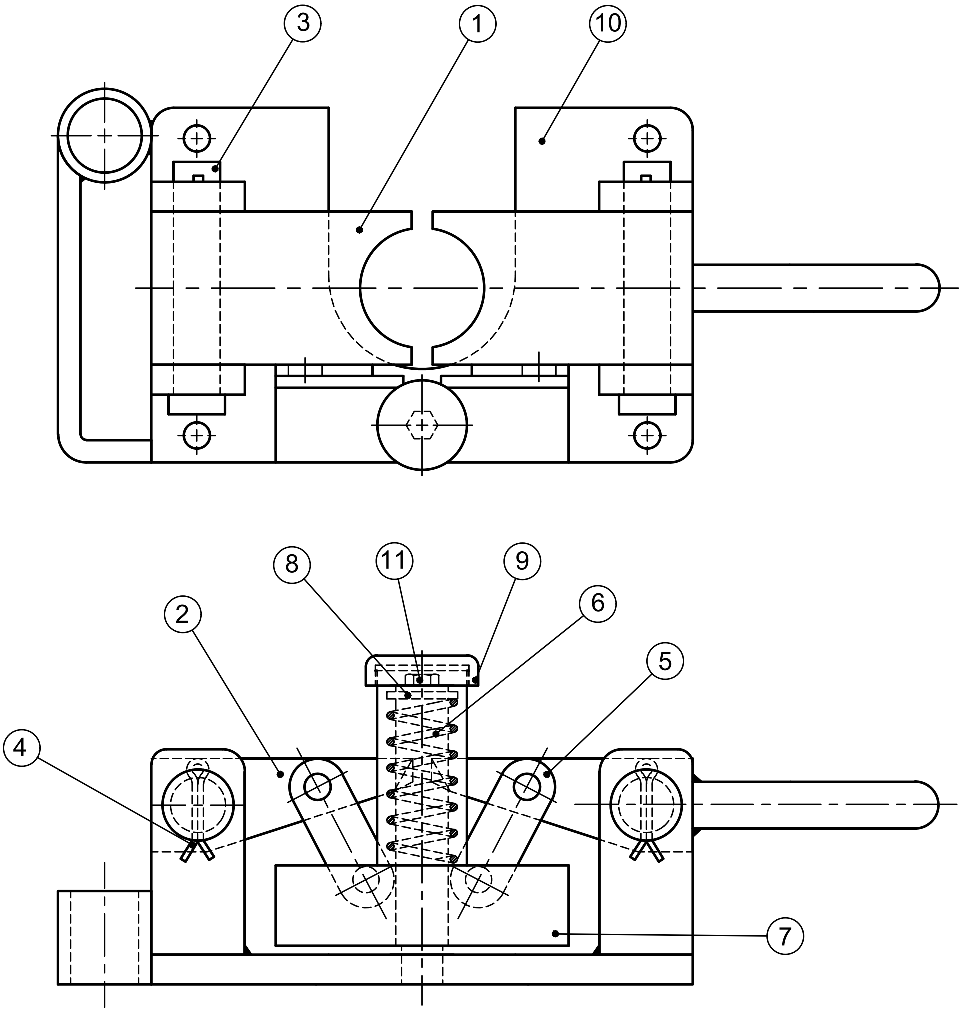


8.2.5D GUIDE PLATE

8.2.5E CARRYING HANDLE

All dimensions in millimetres

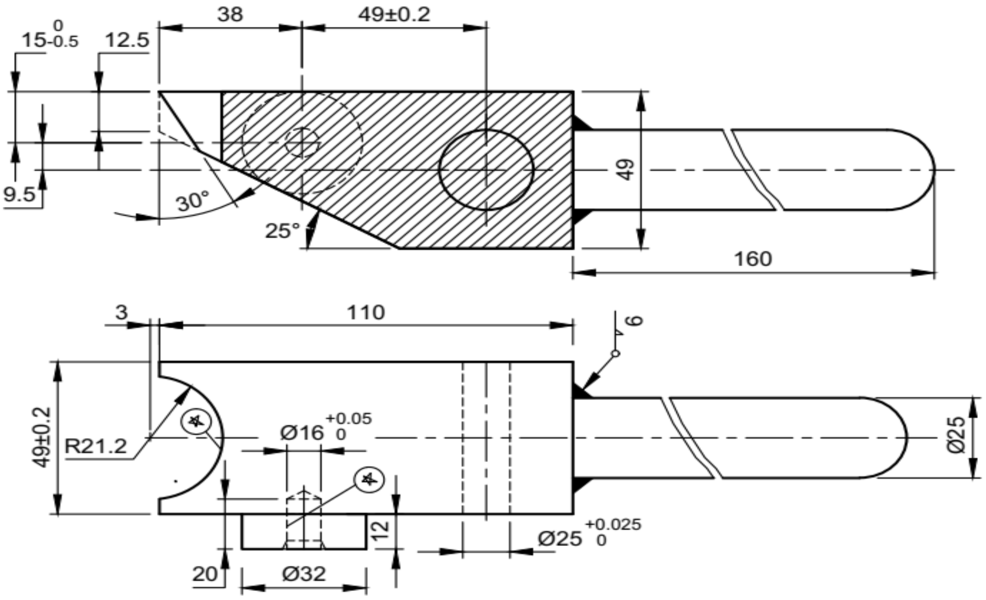
Fig. 8.2.5 Clamp Base Assembly Parts (*Concluded*)



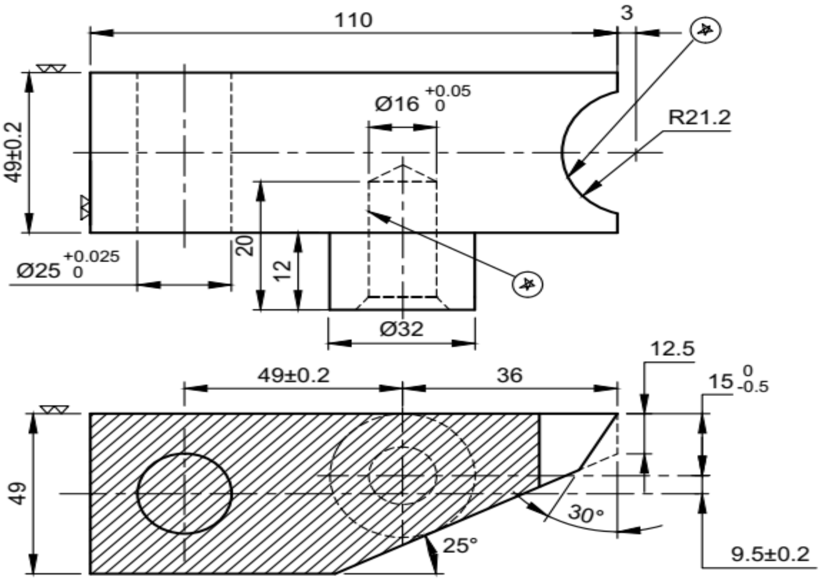
11	1	Screw M12x30 long	Std 11	Steel	IS 1364 (Part 2) - Gr 10.9
10	1	Base Assembly	Fig 8.2.7J	Mild Steel	Quality A of Grade E 250 of IS 2062
9	1	Protection Cover	Fig 8.2.7I	Mild Steel	Quality A of Grade E 250 of IS 2062
8	1	Spring Retainer	Fig 8.2.7H	Mild Steel	Quality A of Grade E 250 of IS 2062
7	2	Lifting Block	Fig 8.2.7G	Mild Steel	Quality A of Grade E 250 of IS 2062
6	1	Spring	Fig 8.2.7F	Spring Steel	IS 4454 (Part 1)
5	2	Link Plate	Fig 8.2.7E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	2	Split Pin	Fig 8.2.7D	Steel	IS 549
3	1	Axle Pin	Fig 8.2.7C	Carbon Steel	EN 8
2	1	Left Hand Jaw	Fig 8.2.7B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Right Hand Jaw	Fig 8.2.7A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: This clamp is suited upto 45 m depth application.
Alternative pipe clamp arrangements may be used
for application beyond 45 m.

FIG. 8.2.6 SELF LOCKING CLAMP



8.2.7A RIGHT HAND JAW

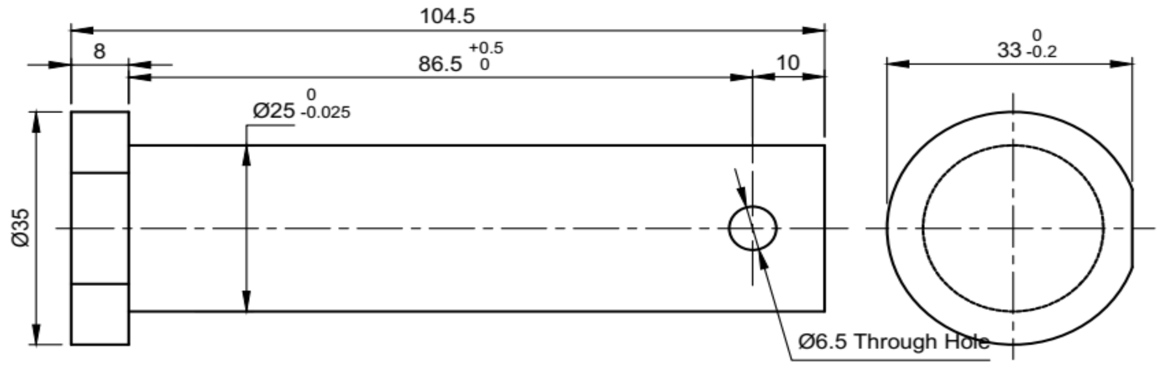


8.2.7B LEFT HAND JAW

⊛ Surface hardened to 30-50 HRC.

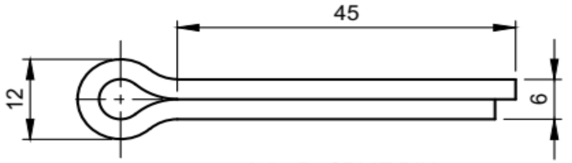
All dimensions are in millimetres

FIG. 8.2.7 SELF CLOSING CLAMP PARTS (*Continued*)

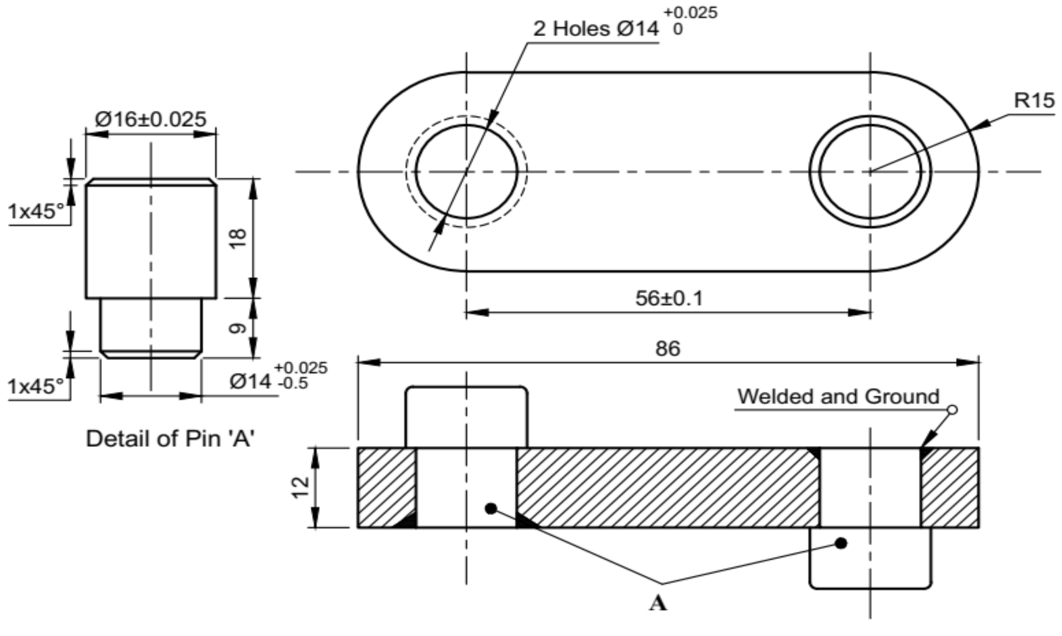


Surface Hardened to 30-50 HRC.

8.2.7C AXLE PIN



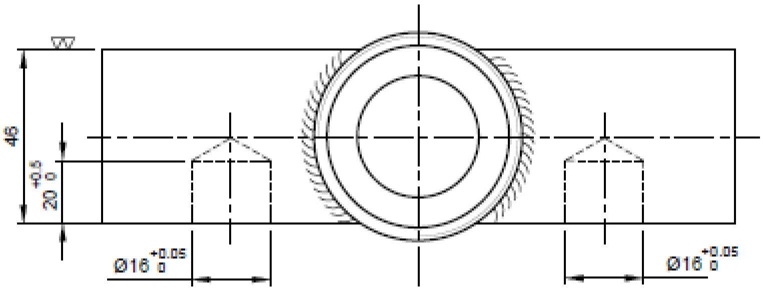
8.2.7D SPLIT PIN

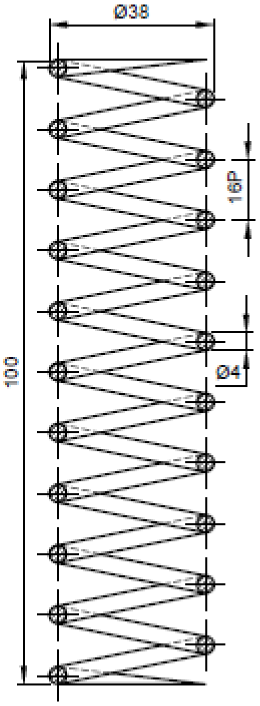


8.2.7E LINK PLATE

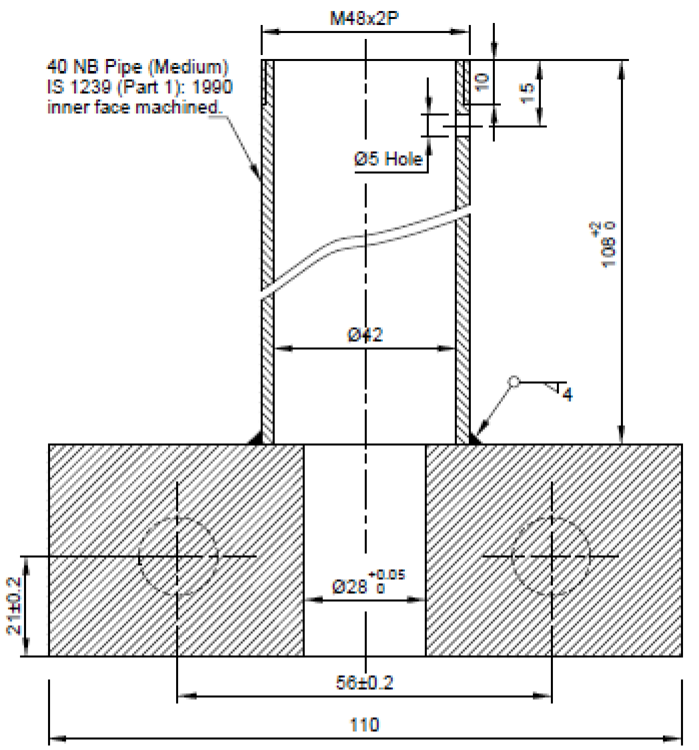
All dimensions are in millimetres

FIG. 8.2.7 SELF CLOSING CLAMP PARTS (*Continued*)

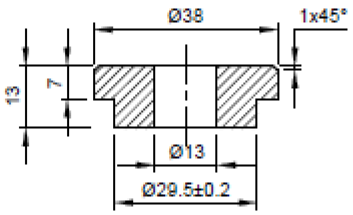




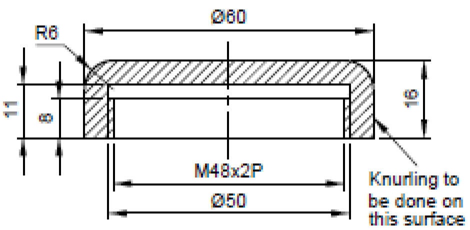
8.2.7F SPRING



8.2.7G LIFTER BLOCK



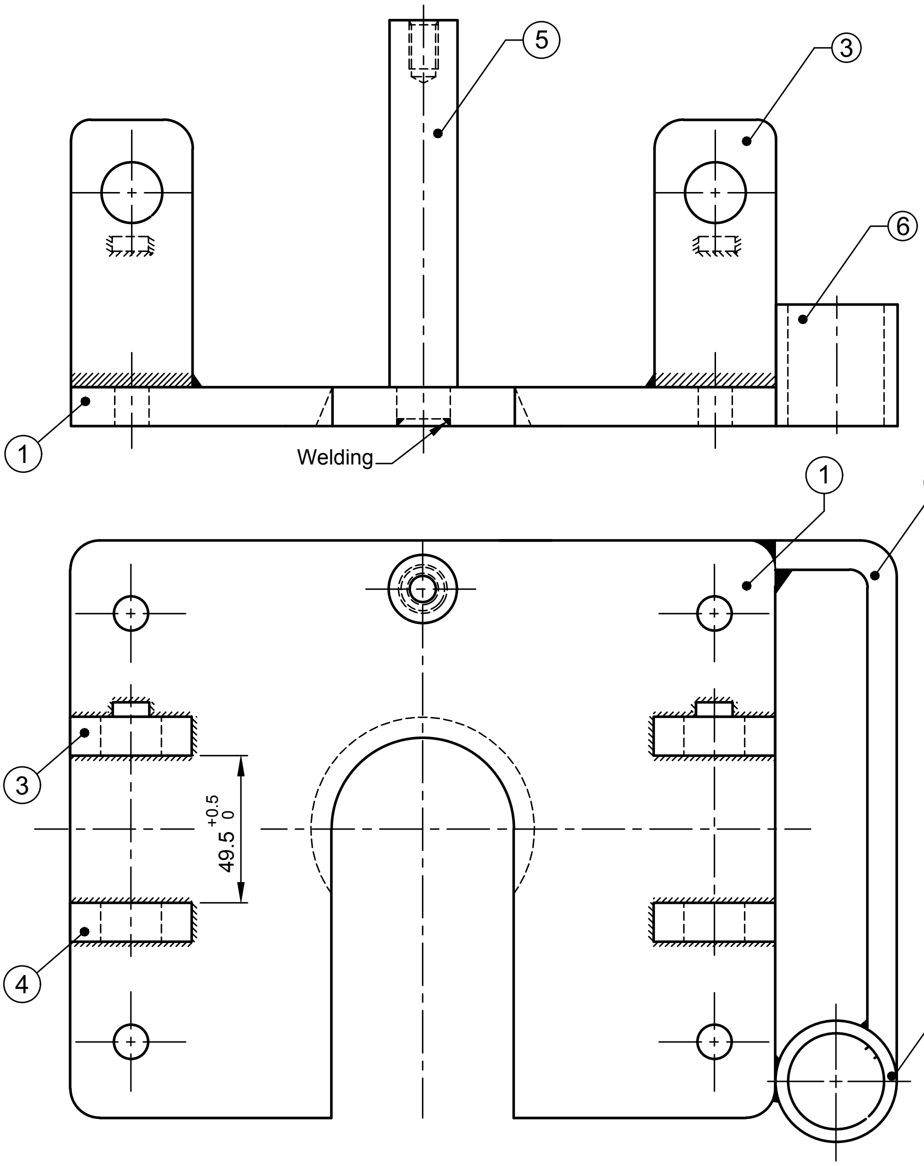
8.2.7H SPRING RETAINER



8.2.7I COVER

All dimensions are in millimetres

FIG. 8.2.7 SELF LOCKING CLAMP PARTS (*Continued*)

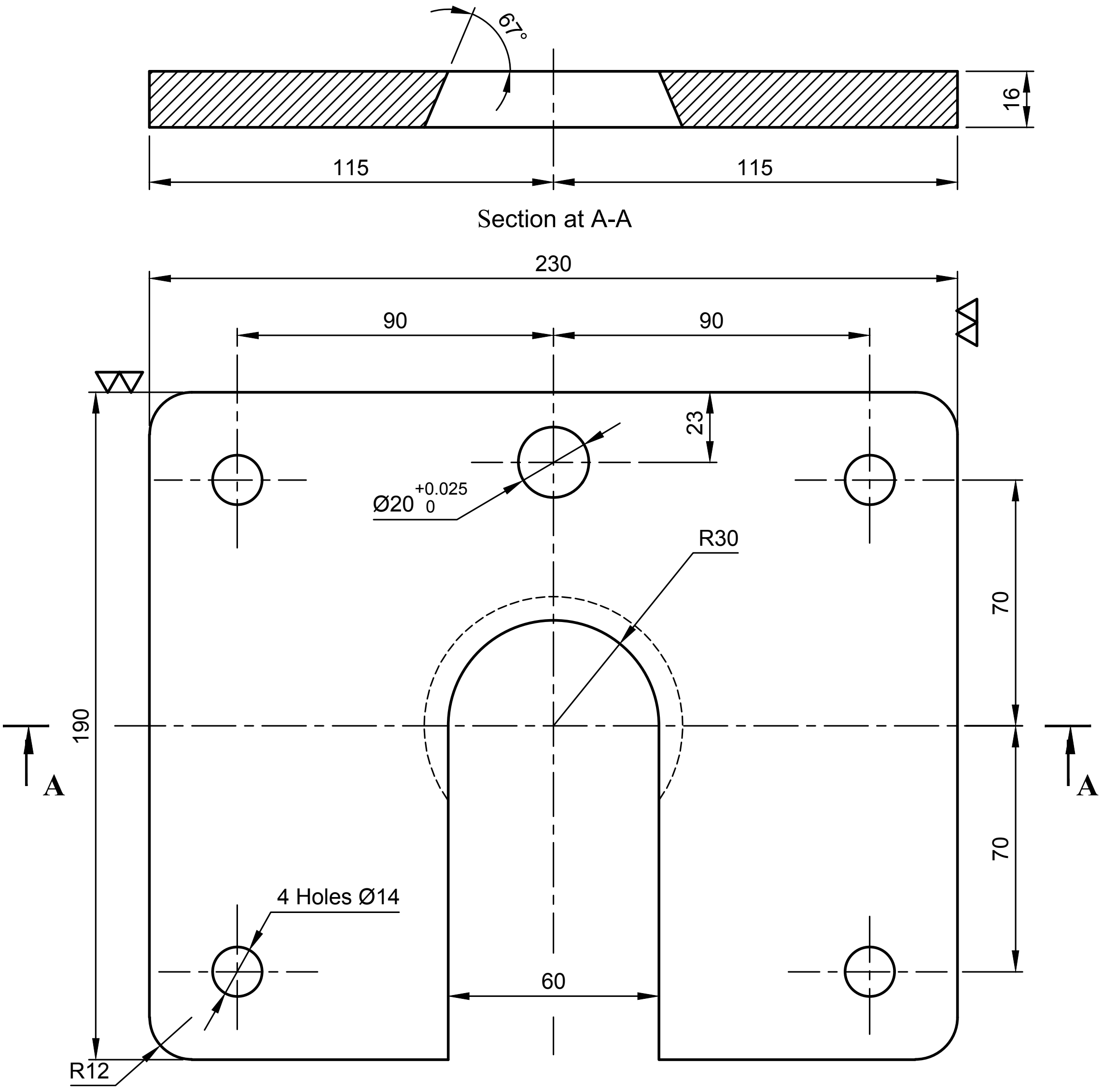


6	1	Pipe Lifter Holder	Fig 8.2.8F	Mild Steel	Quality A of Grade E 250 of IS 2062
5	2	Guide Pillar	Fig 8.2.8E	Carbon Steel	40C8 of IS 5517
4	2	Supporting Pillar	Fig 8.2.8D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	2	Supporting Pillar with Stopper	Fig 8.2.8C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Handle	Fig 8.2.8B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Base Plate	Fig 8.2.8A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

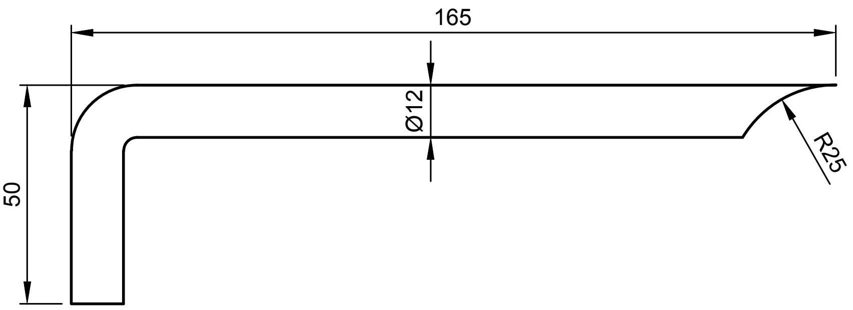
8.2.7J BASE ASSEMBLY

All dimensions in millimetres

FIG. 8.2.7 SELF CLOSING CLAMP PARTS (*Concluded*)



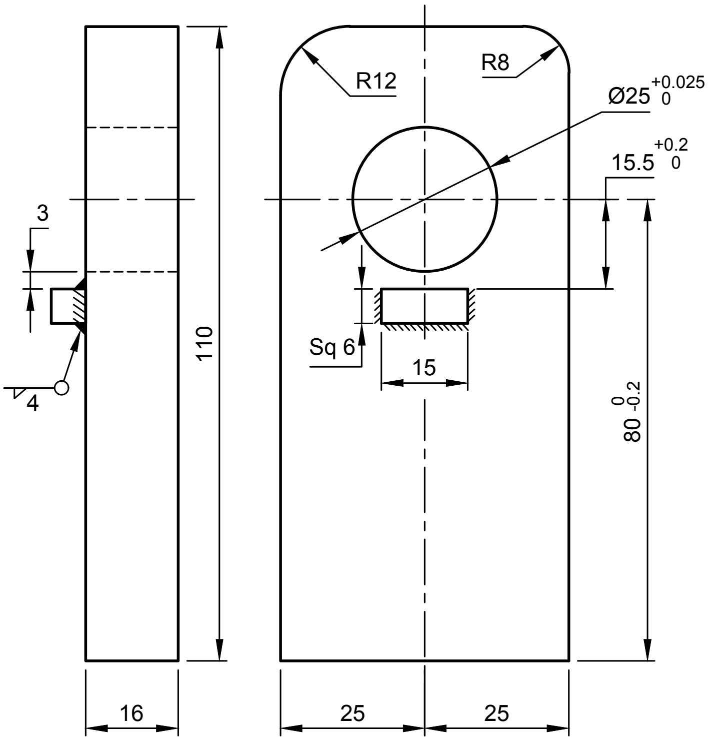
8.2.8A BASE PLATE



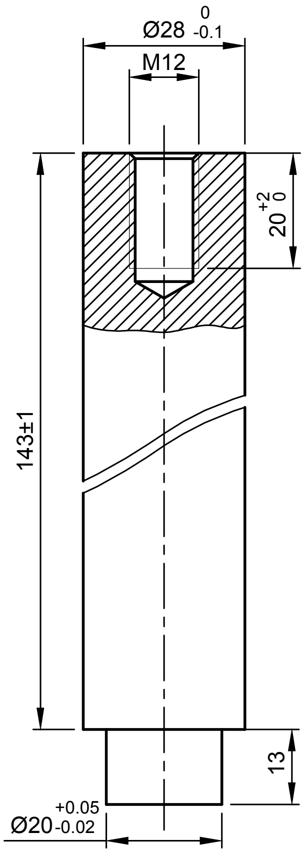
8.2.8B HANDLE

All dimensions in millimetres

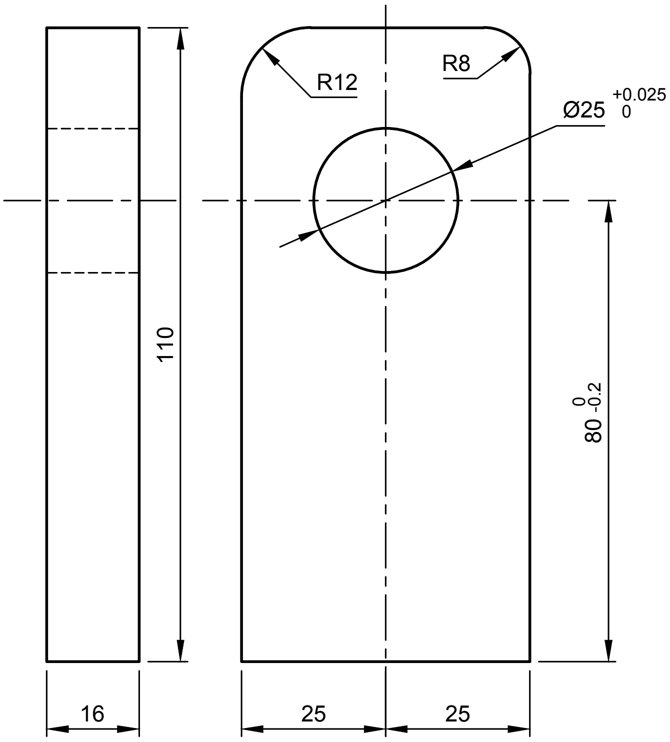
FIG. 8.2.8 BASE ASSEMBLY PARTS (*Continued*)



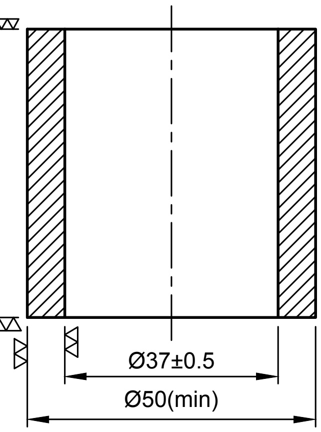
8.2.8C SUPPORTING PILLAR WITH SUPPORT



8.2.8E GUIDE PILLAR



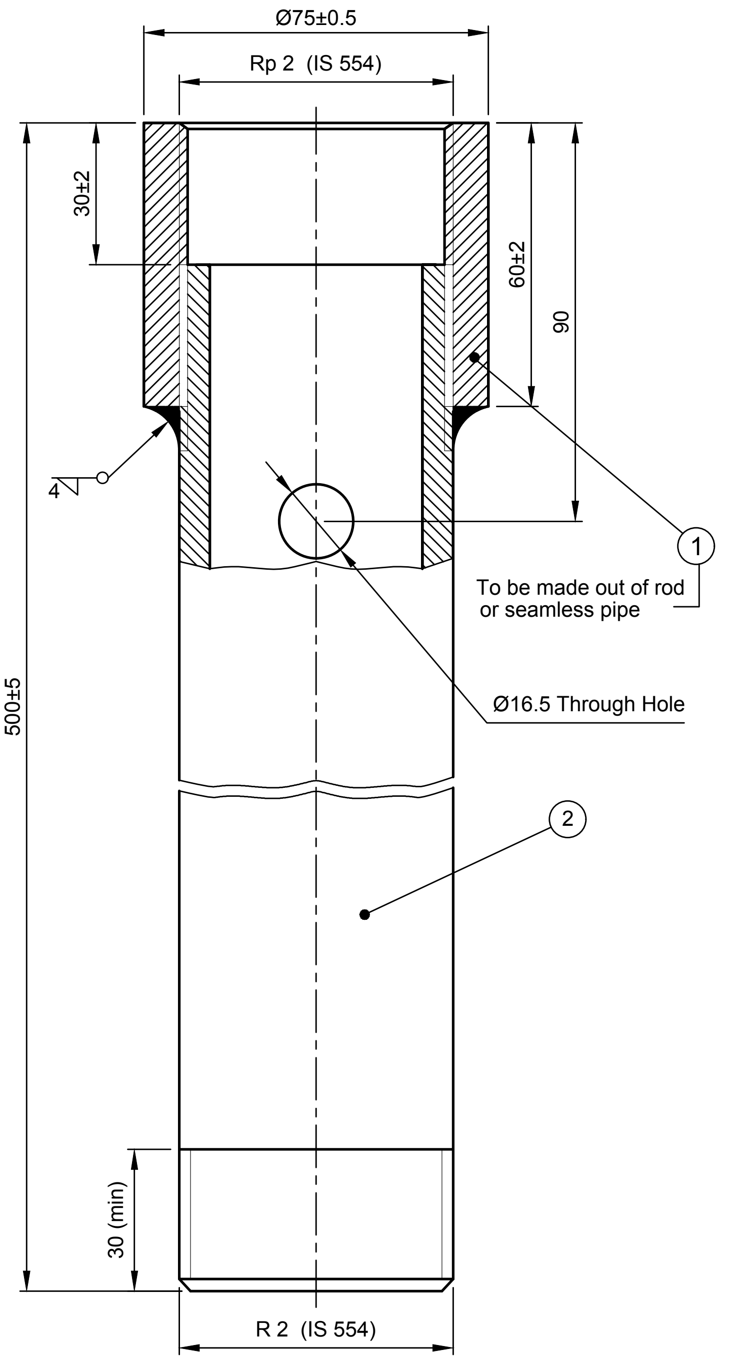
8.2.8D SUPPORTING PILLAR



8.2.8F PIPE-LIFTER HOLDER

All dimensions in millimetres

FIG. 8.2.8 BASE ASSEMBLY PARTS (*Concluded*)

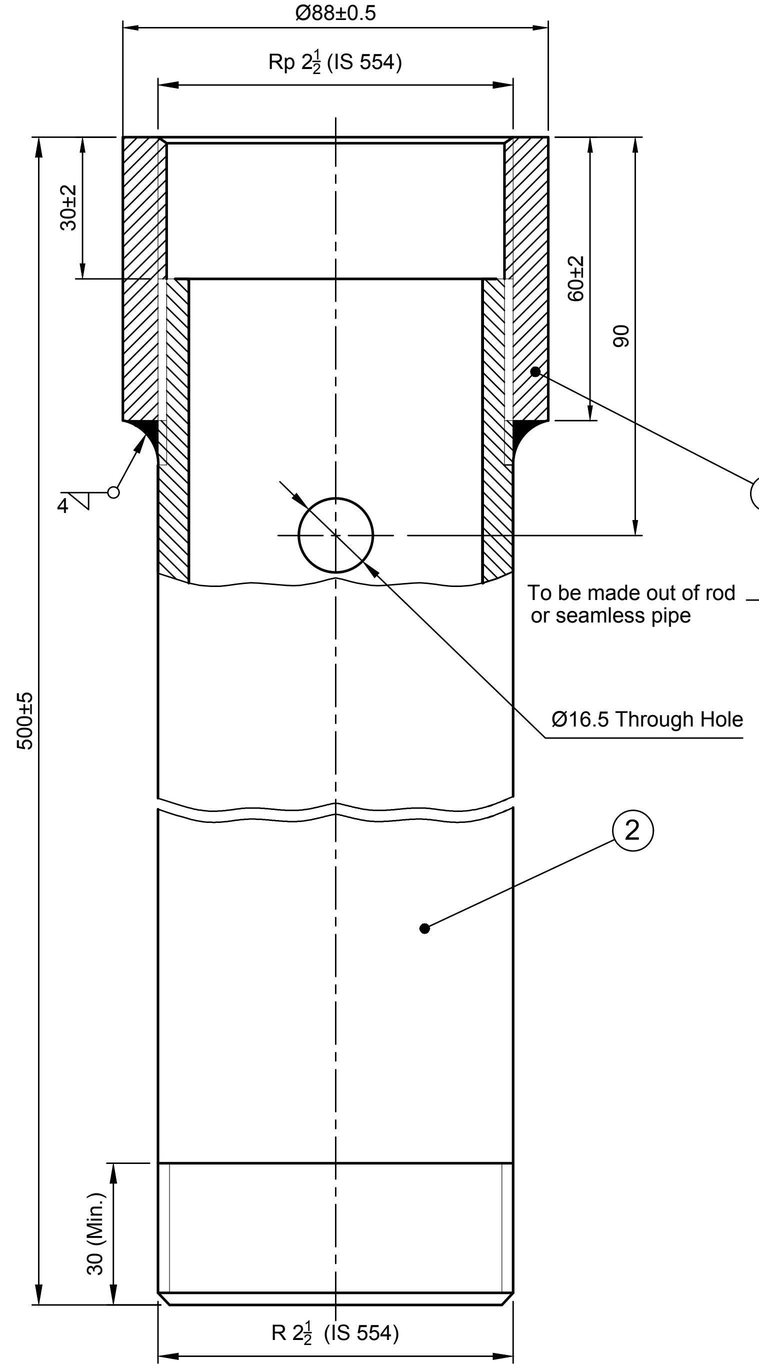


Part No.	No. Off	Description	Material	
2	1	Pipe, 50 NB	Mild Steel	IS 1239 (Part 1) - medium
1	1	Pipe Coupler	Mild Steel	Quality A of Grade E 250 of IS 2062

All dimensions in millimetres

8.3.1A WATER TANK LIFTER - VLOM 50

FIG. 8.3.1 WATER TANK LIFTER (*Continued*)

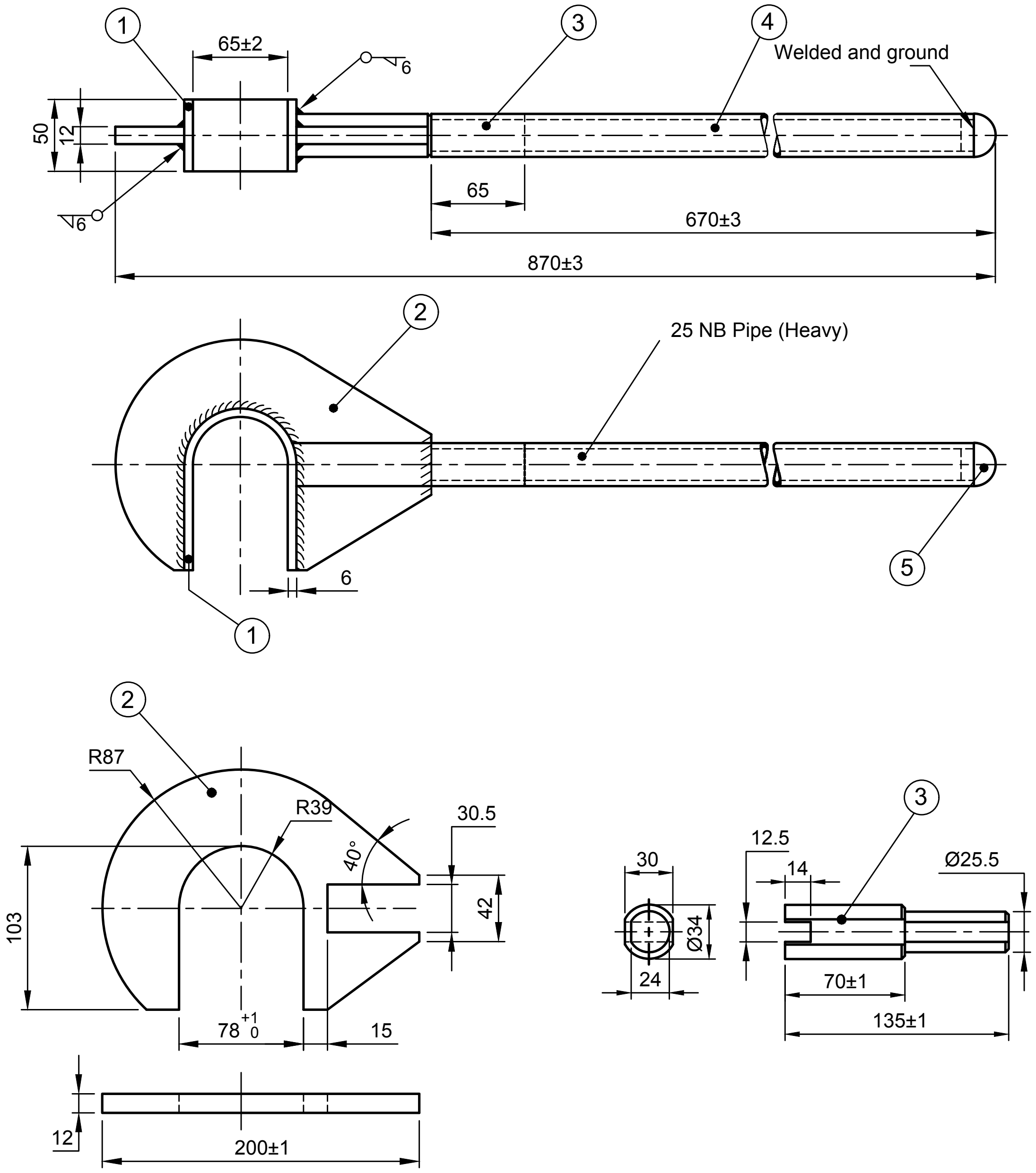


2	1	Pipe, 65 NB	Mild Steel	IS 1239 (Part 1) - medium
1	1	Pipe Coupler	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millimetres

8.3.1B WATER TANK LIFTER_VLOM 65

FIG. 8.3.1 WATER TANK LIFTER (*Concluded*)

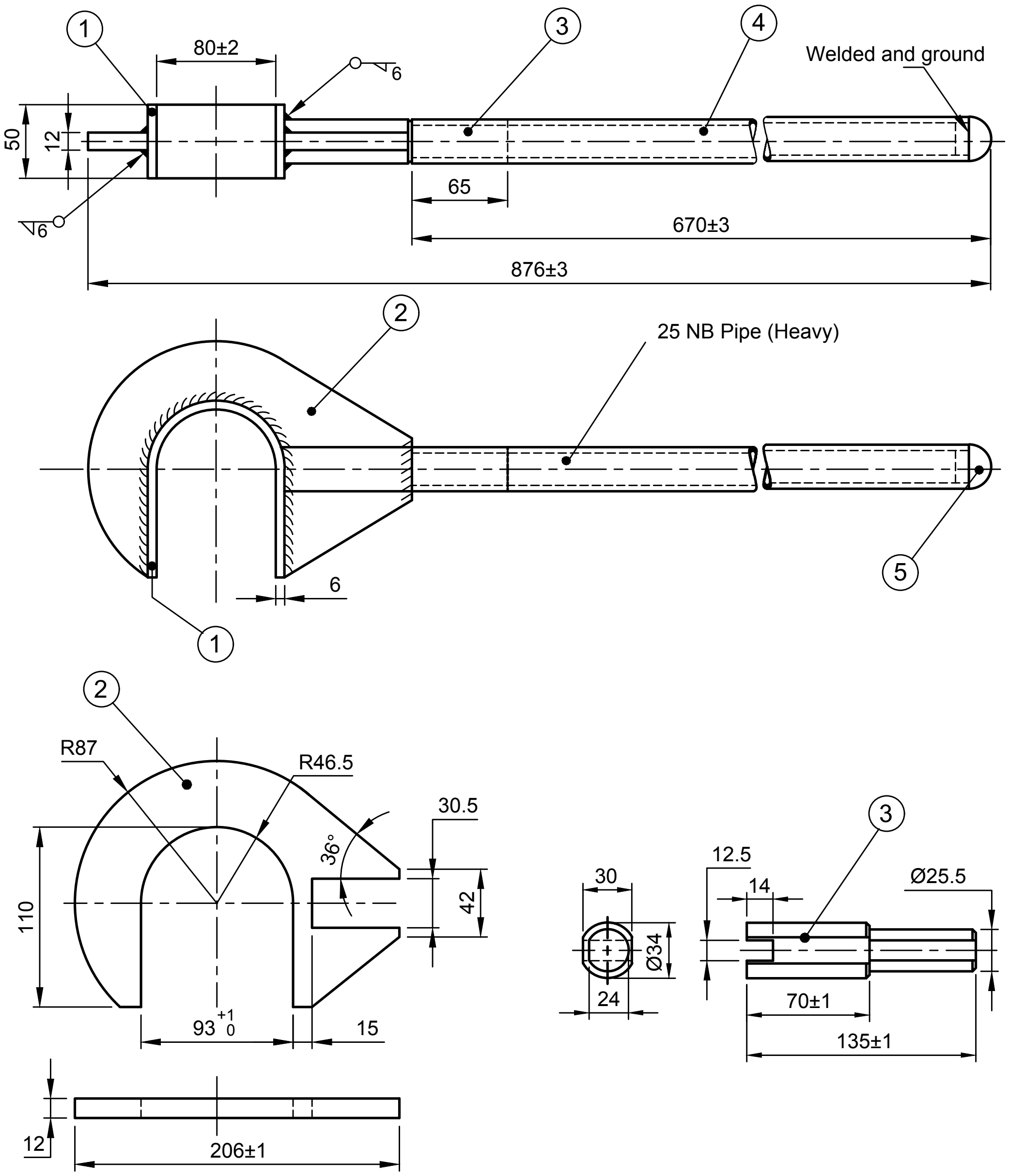


5	1	End Plug	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Pipe, 25 NB	Mild Steel	IS 1239 (Part 1), heavy
3	1	Split Rod	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Hook Plate	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	`U' Plate	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millimetres

8.3.2A PIPE LIFTING SPANNER - VLOM 50

FIG. 8.3.2 PIPE LIFTING SPANNER (*Continued*)

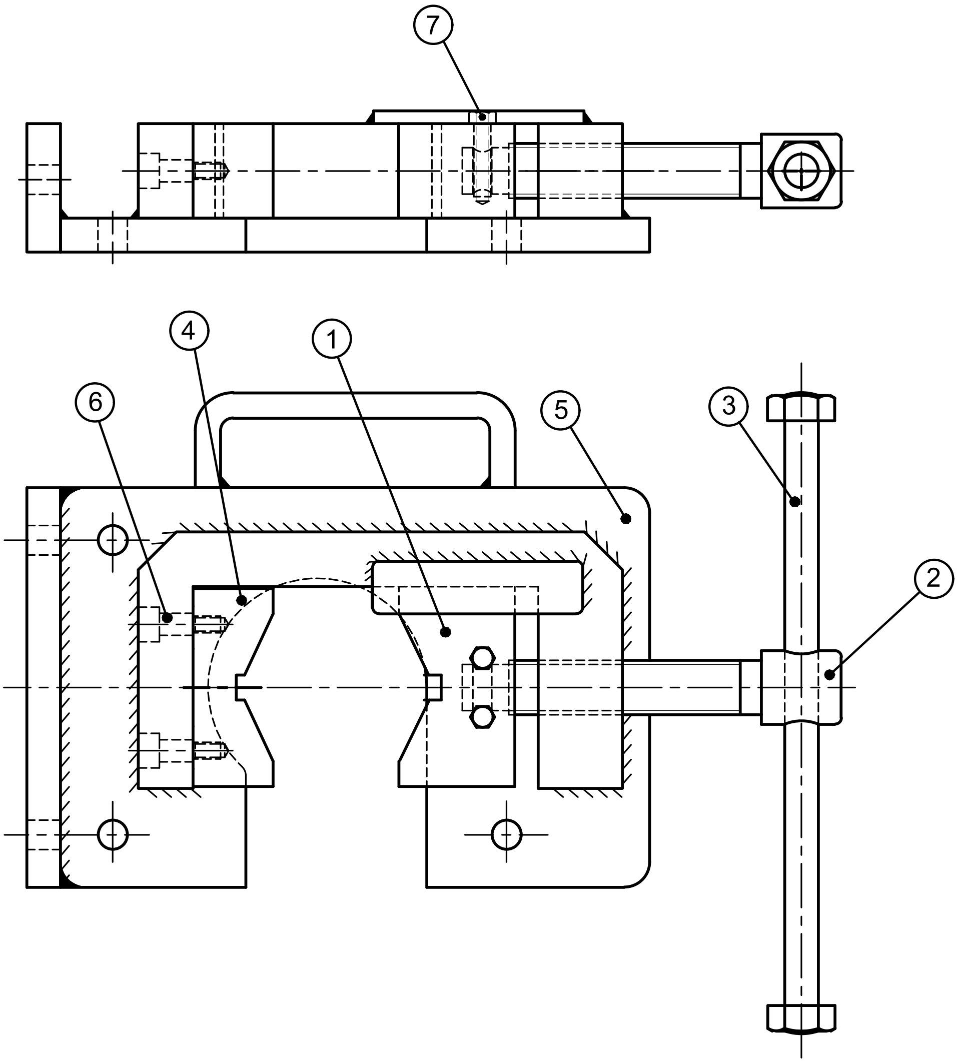


5	1	End Plug	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Pipe, 25 NB	Mild Steel	IS 1239 (Part 1), heavy
3	1	Split Rod	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Hook Plate	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	`U' Plate	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Material**	

All dimensions in millimetres

8.3.2B PIPE LIFTING SPANNER - VLOM 65

FIG. 8.3.2 PIPE LIFTING SPANNER (*Concluded*)

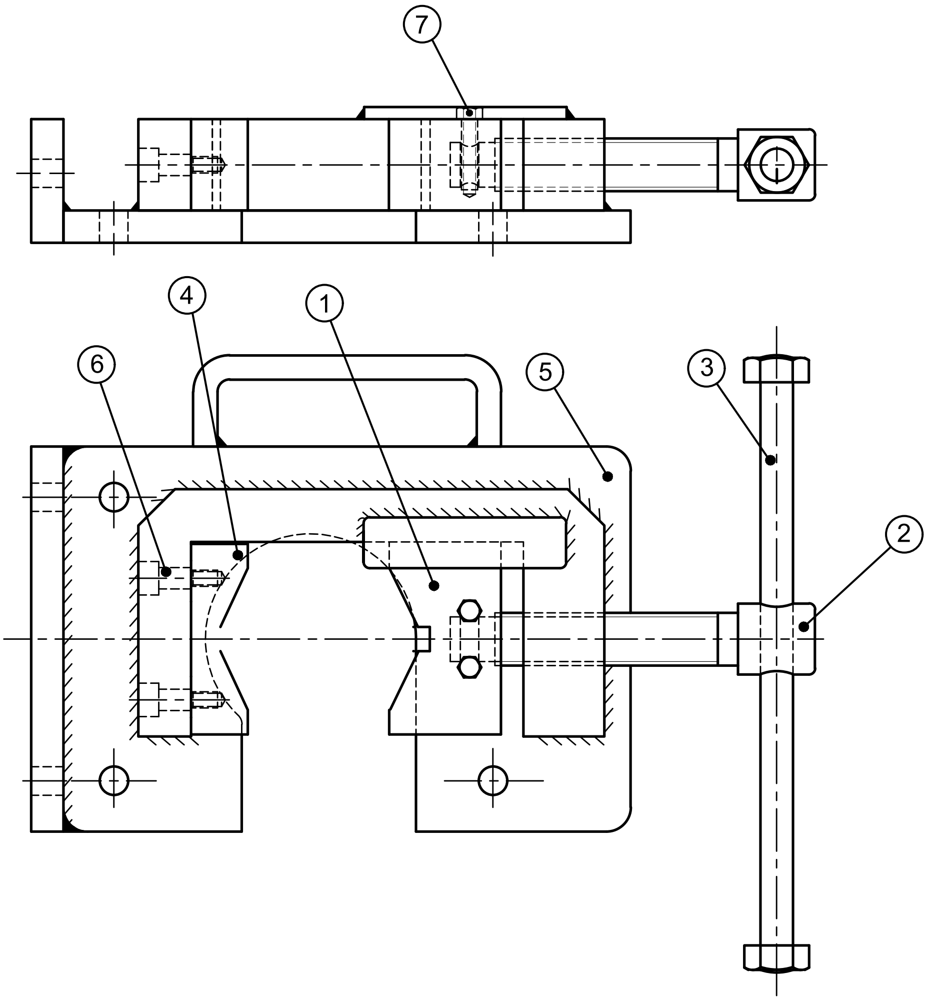


7	1	Hex. Bolt M8 X 30	Std 07	Steel	IS 1363 (Part 1)
6	2	Hexagon Socket Head Cap Screw M10 x 25	Std 08	Steel	IS 2269
5	1	Clamp Base Assembly	Fig 8.3.4E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Fixed Jaw	Fig 8.2.4B	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Handle	Fig 8.3.4C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Threaded Shaft	Fig 8.3.4B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Movable jaw	Fig 8.3.4A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: This clamp is suited upto 45 m depth application. Alternative pipe clamp arrangements may be used for application beyond 45 m.

All dimensions are in millimetres

Fig. 8.3.3A Heavy Duty Clamps-VLOM 50 (*Continued*)



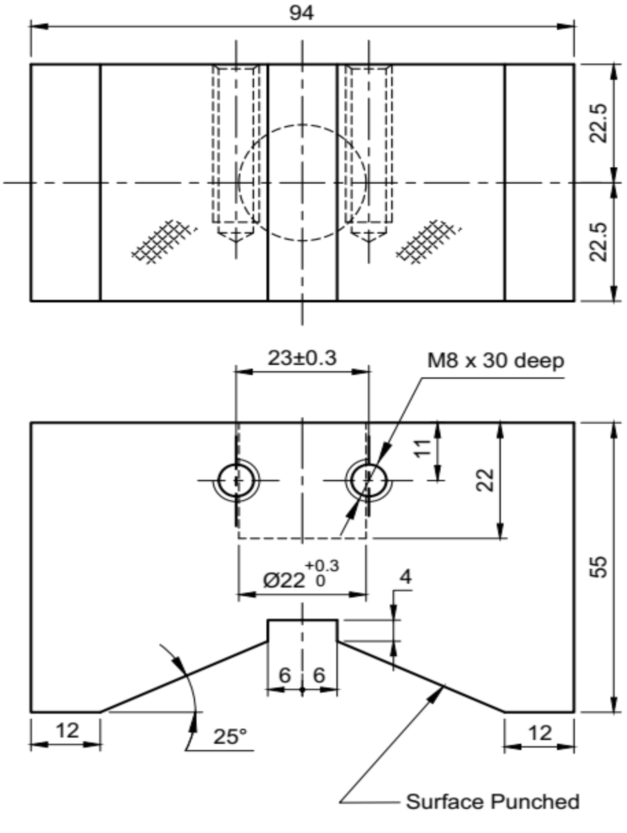
7	1	Hex. Bolt M8 X 30	Std 07	Steel	IS 1363 (Part 1)
6	2	Hexagon Socket Head Cap Screw M10 x 25	Std 08	Steel	IS 2269
5	1	Clamp Base Assembly	Fig 8.3.4E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Fixed Jaw	Fig 8.3.4D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Handle	Fig 8.3.4C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Threaded Shaft	Fig 8.3.4B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Movable jaw	Fig 8.3.4A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

NOTE: This clamp is suited upto 30 m depth application.
Alternative pipe clamp arrangements may be used for application beyond 30 m.

All dimensions in millimetres

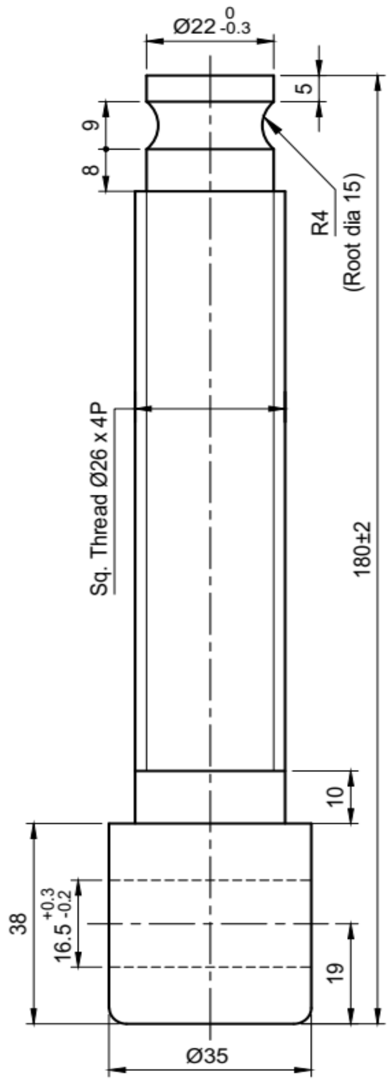
8.3.3B HEAVY DUTY CLAMP - VLOM 65

FIG. 8.3.3 HEAVY DUTY CLAMP (*Concluded*)

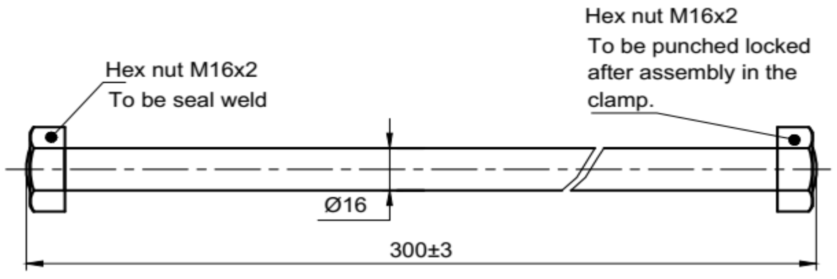


Carburised and hardened to 40-45 HRC.

8.3.4A MOVABLE JAW



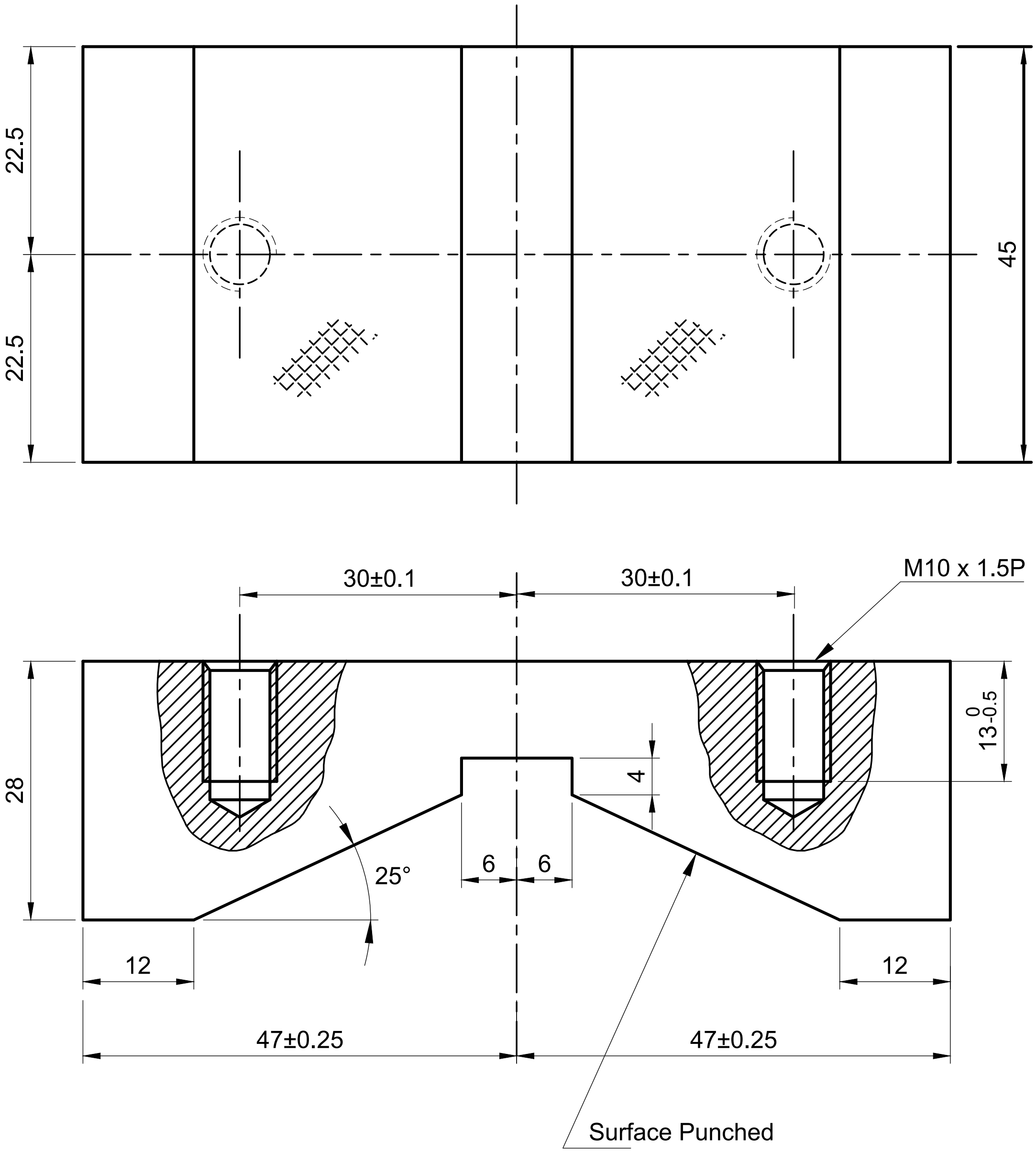
8.3.4B THREADED SHAFT



8.3.4C HANDLE

All dimensions in millimetres

Fig. 8.3.4 Heavy Duty Clamp Parts (*Continued*)

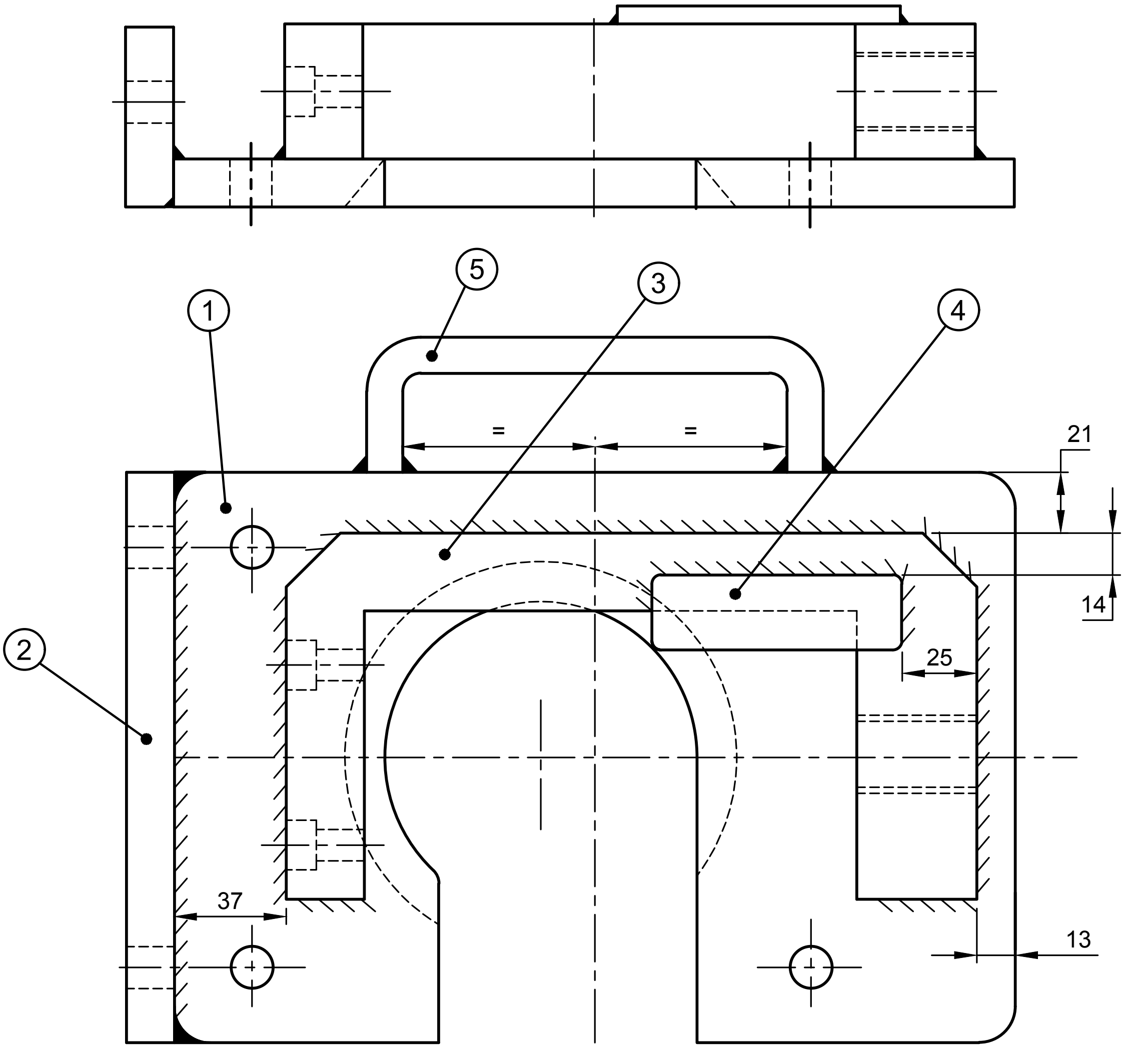


Carburised and hardened to 40-45 HRC

8.3.4D FIXED JAW - VLOM 65

All dimensions in millimetres

FIG. 8.3.4 HEAVY DUTY CLAMP PARTS (*Continued*)

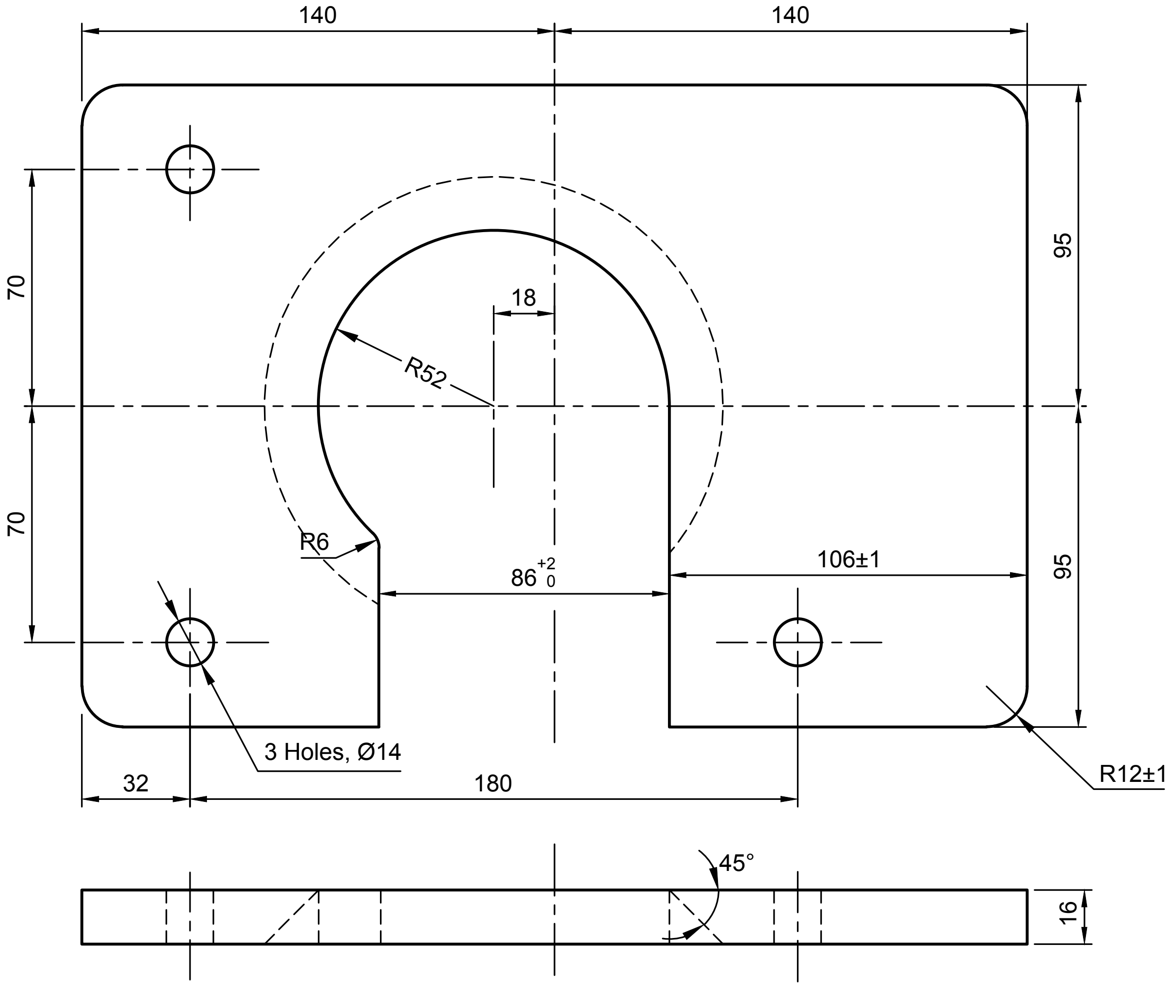


5	1	Carrying Handle	Fig 8.2.5E	Mild Steel	Quality A of Grade E 250 of IS 2062
4	1	Guide Plate	Fig 8.2.5D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	1	Supporting Block	Fig 8.2.5C	Mild Steel	Quality A of Grade E 250 of IS 2062
2	1	Side Plate	Fig 8.3.5B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Base Plate	Fig 8.3.5A	Mild Steel	Quality A of Grade E 250 of IS 2062
Part No.	**No. Off**	**Description**	**Reference**	**Material**	

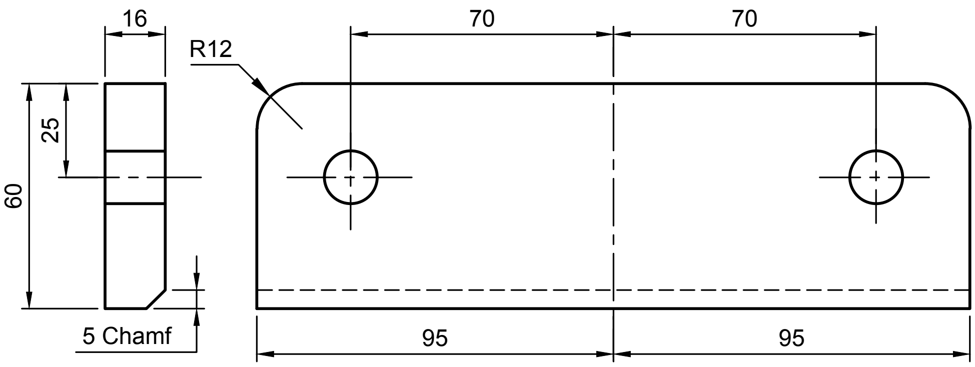
8.3.4E CLAMP BASE ASSEMBLY

All dimensions in millimetres

FIG. 8.3.4 HEAVY DUTY CLAMP PARTS (*Concluded*)



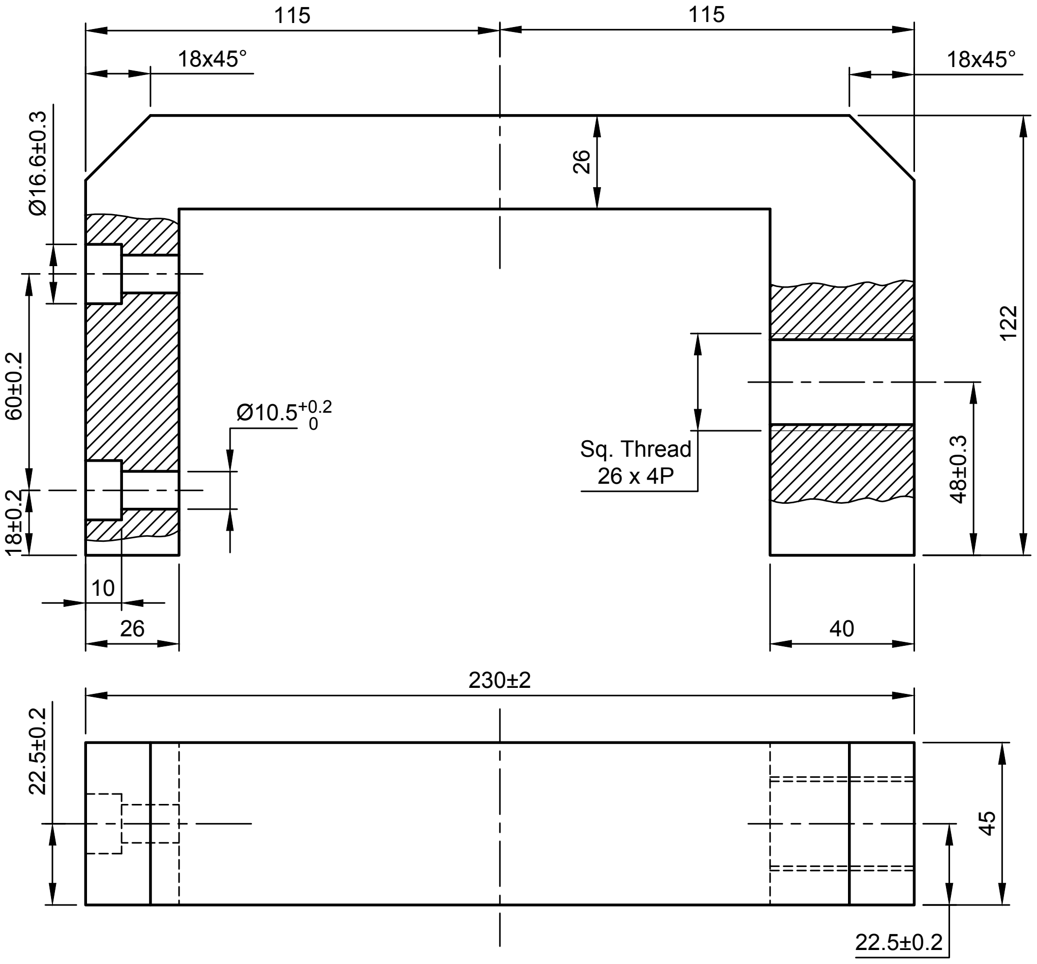
8.3.5A BASE PLATE



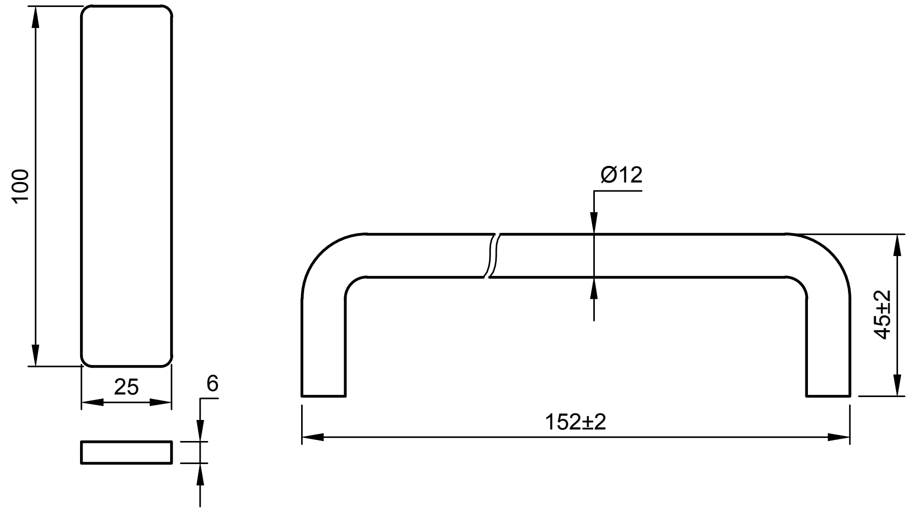
8.3.5B SIDE PLATE

All dimensions in millimetres

FIG. 8.3.5 CLAMP BASE ASSEMBLY PARTS (*Continued*)



8.3.5C SUPPORTING BLOCK

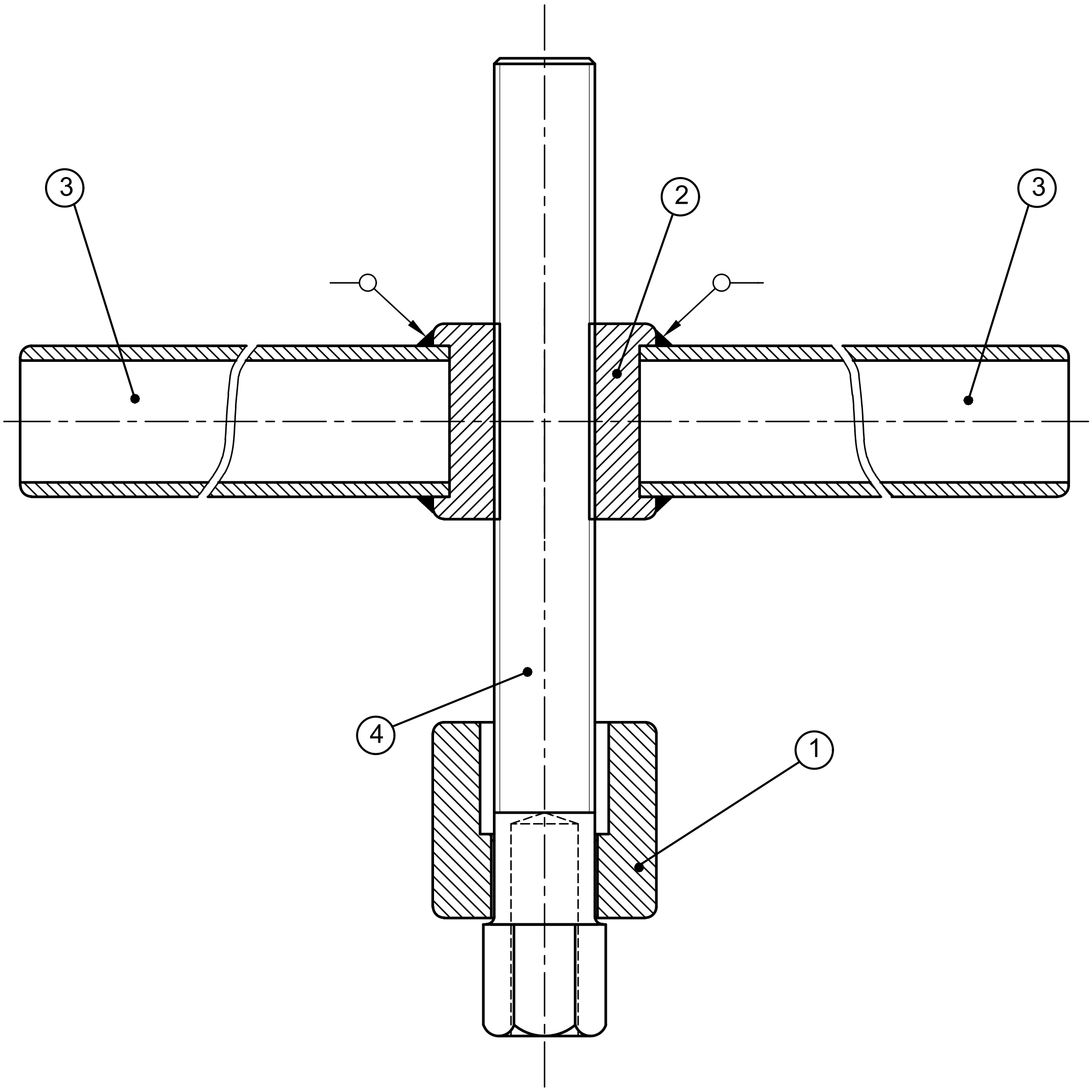


8.3.5D GUIDE PLATE

8.3.5E CARRYING HANDLE

All dimensions in millimetres

Fig. 8.3.5 Clamp Base Assembly Parts (*Concluded*)

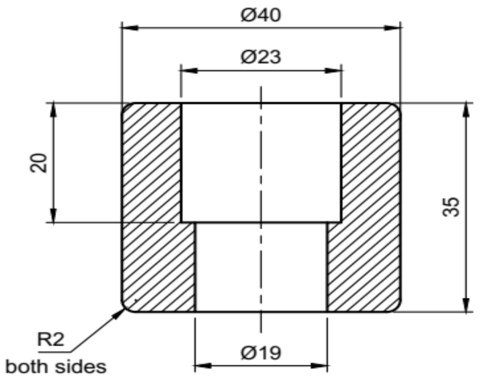


Part No.	No. Off	Description	Reference	Material	
4	1	Threaded shaft	Fig 8.3.7D	Mild Steel	Quality A of Grade E 250 of IS 2062
3	2	Handle	Fig 8.3.7C	Mild Steel	IS 1239 (Part 1), medium
2	1	Threaded bush	Fig 8.3.7B	Mild Steel	Quality A of Grade E 250 of IS 2062
1	1	Plain bush	Fig 8.3.7A	Mild Steel	Quality A of Grade E 250 of IS 2062

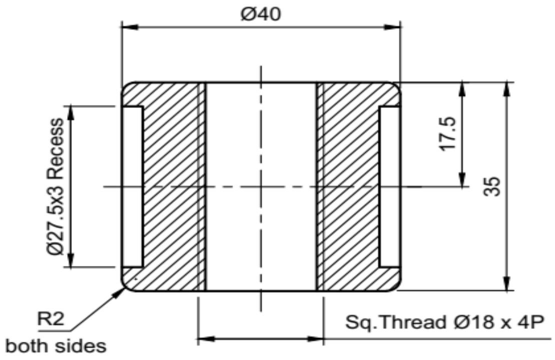
NOTE:

1) Items 1 and 4 to be carburised and hardened to 40-45 HRc
2) All parts to be electrogalvanised to Service Grade No. 3 of IS:1573 and passivated.

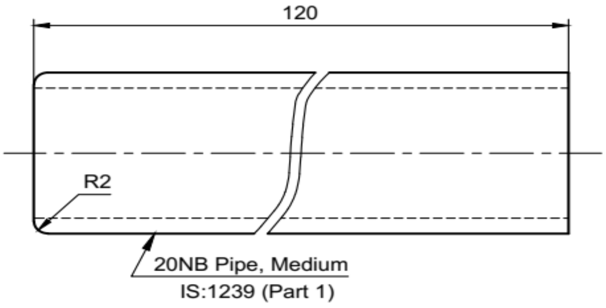
FIG. 8.3.6 CHECK VALVE PULLER



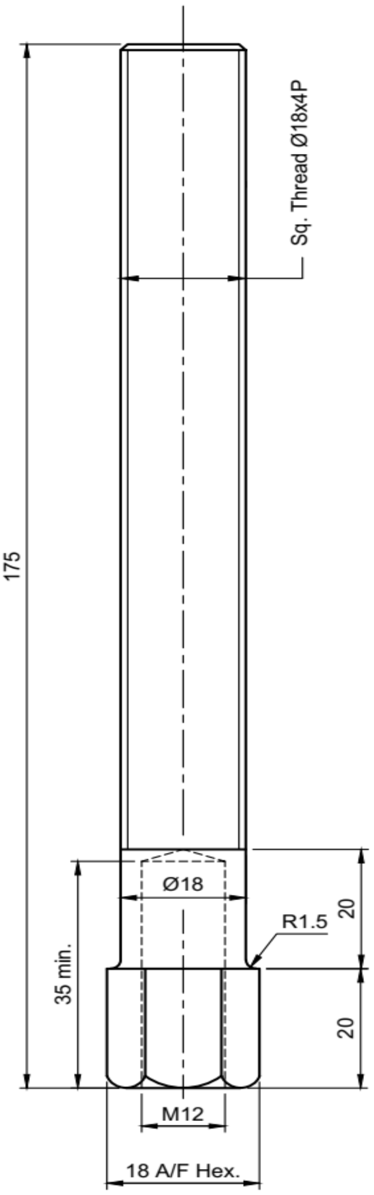
8.3.7A PLAIN BUSH



8.3.7B THREADED BUSH



8.3.7C HANDLE



8.3.7D THREADED SHAFT

All dimensions are in millimetres

FIG. 8.3.7 PARTS OF CHECK VALVE PULLER

ANNEX A

[*Clause* 2 (Part 1)]

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
210 : 2009	Grey iron castings (*fourth revision*)
318 : 1981	Leaded tin bronze ingots and castings (*second revision*)
407 : 1981	Brass tubes for general purposes (*third revision*)
513 (Part1) : 2016	Cold reduced carbon steel sheets and strip: Part 1 Cold forming and drawing purposes (*sixth revision*)
(Part 2) : 2016	Part 2 High tensile and multiphase steel
549 : 2005	Split pins — Specification (*third revision*)
554 : 1999	Pipe threads where pressure-tight joints are made on the threads — Dimensions, tolerances and designation (*fourth revision*)
808 : 1989	Dimensions for hot rolled steel beam, column, channel and angle sections (*third revision*)
1161 : 2014	Steel tubes for structural purposes (*fifth revision*)
1239	Steel tubes, tubular and other wrought steel fittings (*sixth revision*)
(Part 1) : 2004	Steel tubes (*sixth revision*)
(Part 2) : 2011	Steel pipe fittings (*fifth revision*)
1363	Hexagon head bolts, screws and nuts of product Grade C:
(Part 1) : 2019	Hexagon head bolts (size range M5 to M64) (*fifth revision*)
(Part 3) : 2018	Hexagon nuts (size range M5 to M64) (*fifth revision*)
1364 (Part 1) : 2018	Hexagon head bolts, screws and nuts of product grades A and B: Part 1 Hexagon head bolts (size range M1.6 to M64) (*fifth revision*)
1367	Technical supply conditions for threaded steel fasteners
(Part 2) : 2002	Tolerances for fasteners bolts, screws, studs and nuts — Product Grades A, B and C (*third revision*)
(Part 11) : 2002	Electroplated coatings (*third revision*)
(Part 14/Sec 1) : 2002	Mechanical properties of corrosion resistance stainless steel fasteners, Section 1 Bolts, screws and studs (*third revision*)
(Part 14/Sec 2) : 2002	Mechanical properties of corrosion resistance stainless steel fasteners, Section 2 Nuts (*third revision*)
1573 : 1986	Electroplated coatings of zinc on iron and steel (*second revision*)
2030 : 1989	Box spanners — Specification (*second revision*)
2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (*seventh revision*)
2074 Part 2015	Ready mixed paint, air drying, red oxide — Zinc chrome, priming — Specification (*third revision*)
2102 (Part 1) : 1993	General tolerances: Part 1 Tolerances for linear and angular dimensions without individual tolerance indications (*third revision*)
2269 : 2006	Hexagon socket head cap screws (*fifth revision*)
2403 : 2014	Short pitch transmission precision roller and bush chains, attachments and associated chain sprockets (*third revision*)
2500 (Part 1) : 2000	Sampling inspection procedures: Part 1 Attribute sampling plans indexed by acceptable quality limit(AQL) for lot-by-lot inspection (*third revision*)
2629 : 1985	Recommended practice for hot dip galvanizing on iron and steel (*first revision*)

IS No.	*Title*
2643 : 2005	Pipe threads where pressure-tight joints are not made on threads — Dimensions, tolerances and designation (*third revision*)
2811 : 1987	Recommendations for manual tungsten inert gas arc welding of austenitic stainless steel (*first revision*)
2932 (Part 1) : 2013	Enamel, synthetic, exterior: (a) Undercoating (b) Finishing — Specification: Part 1 Domestic and decorative applications (*fourth revision*)
3400 (Part 1) : 2012	Methods of test for vulcanized rubbers: Part 1 Tensile stress-strain properties (*third revision*)
(Part 2) : 2014	Part 2 Rubber, vulcanized or thermoplastic — Determination of hardness (Hardness between 10 IRHD and 100 IRHD) (*fourth revision*)
(Part 6) : 2012	Determination of the effect of liquids (*third revision*)
(Part 10) : 1977	Compression set at constant strain (*first revision*)
(Part 22) : 1984	Chemical analysis
3428 : 2009	Dimensions for relief grooves (*second revision*)
4454 (Part 1) : 2001	Steel wires for mechanical springs: Part 1 Patented and cold drawn steel wires, unalloyed (*third revision*)
4695 (Part 1) : 2003	General Purpose Knuckle threads: Part 1 Profiles and nominal sizes (*second revision*)
(Part 2) : 2003	Deviations and tolerances (*second revision*)
4740 : 1979	Code of practice for packaging of steel tubes (*first revision*)
4759 : 1996	Hot-dip zinc coatings on structural steel and other allied products (*third revision*)
5206 : 1983	Covered electrodes for manual arc welding of stainless steel and other similar high alloy steels (*first revision*)
5517 : 1993	Steels for hardening and tempering (*second revision*)
6455 : 1972	Specification for single row radial ball bearings
6603 : 2001	Stainless steel bars and flats (*first revision*)
6912 : 2005	Copper and copper alloys forging stock and forgings (*second revision*)
7002 : 2005	Prevailing torque type hexagon nuts (with non-metallic insert) style 1 — Property classes 5.8 and 10 (*second revision*)
9550 : 2001	Bright steel bars (*first revision*)
9595 : 1996	Metal arc welding of carbon and carbon manganese steels — Recommendations (*first revision*)
9839 : 1981	Chromate conversion coating on electroplated zinc and cadmium coatings
14962 (Part 3) : 2001	ISO general purpose metric screw threads — Tolerances: Part 3 Deviation for constructional screw threads

ANNEX B

[*Clause* 4.6 (Part 1)]

STANDARD COMPONENTS

Sl No.	**ID No.**	**Part Description**		**Ref to IS No.**
		Name	*Size*	
i)	Std 01	Hexagonal nut (stainless steel)	M6 × 1	IS 1367 (Part 14/Sec 2)
ii)	Std 02	Hexagonal lock nut	M8 × 1.25	IS 1363 (Part 3)
iii)	Std 03	Prevailing torque type steel hexagonal nut	M10 × 1.5	IS 7002
iv)	Std 04	Hexagonal unit	M12 × 1.75	IS 1363 (Part 3)
v)	Std 05	Hexagonal bolt (stainless steel)	M6 × 1× 28	IS 1367 (Part 14/Sec 1)
vi)	Std 06	Hexagonal bolt	M8 × 1.25 × 20	IS 1363 (Part 1)
vii)	Std 07	Hexagonal bolt	M8 × 1.25 × 30	IS 1363 (Part 1)
viii)	Std 08	Hexagonal socket head cap screw	M10 × 1.5 × 25	IS 2269
ix)	Std 09	Hexagonal bolt	M10 × 1.5 × 40	IS 1364 (Part 1) (Property class 8.8)
x)	Std 10	Hexagonal bolt	M12 × 1.75 × 20	IS 1363 (Part 1)
xi)	Std 11	Hexagonal bolt	M12 × 1.75 × 30	IS 1364 (Part 1) (Property class 8.8)
xii)	Std 12	Hexagonal bolt	M12 × 1.75 × 40	IS 1363 (Part 1)
xiii)	Std 13	Hexagonal bolt	M12 × 1.75 × L1)	IS 1363 (Part 1)
xiv)	Std 14	Split pin	Ø6 × 45	IS 549
xv)	Std 15	Ball bearing, single side shielded	20 BC 02 PP	IS 6455
xvi)	Std 16	Roller chain (ISO 16B)	25.4 mm pitch	IS 2403

1) The length L of this bolt will depend upon the number of counter weights used in the extra deepwell pump.

ANNEX C

[*Clause* 12.1 (Part 1)]

RECOMMENDED PACKAGING PROCEDURE

Sl No.	**Sub-assembly/Component**		**Individual Packing**	**Bulk Packing**
	Identification/ Figure No.	*Nomenclature*		
(1)	(2)	(3)	(4)	(5)
1	3.1	Head Assembly – Standard	Covered with polyethylene bag, wrapped in straw rope with hessian cover	—
2	3.2	Head Assembly – Standard		
3	3.3	Head Assembly – EDWP		
4	3.4	Head Assembly – EDWP		
5	3.5	Cylinder Assembly – Standard	Polythene bag	Cardboard box (maximum three numbers per box)
6	3.6A	Upper Valve Assembly – Standard	Polythene bag, individually packed in cardboard carton	Cardboard box
7	3.6B	Lower Valve Assembly – Standard		
8	3.7	Cylinder Assembly – VLOM-65	Polythene bag	Cardboard box (maximum three numbers per box)
9	3.8A	Upper Valve Assembly – VLOM-65	Polythene bag, individually packed in cardboard carton	Cardboard box
10	3.8B	Lower Valve Assembly – VLOM-65		
11	3.9	Cylinder Assembly – VLOM-50	Polythene bag	Cardboard box (maximum three numbers per box)
12	3.10A	Upper Valve Assembly – VLOM-50	Polythene bag, individually packed in cardboard carton	Cardboard box
13	3.10B	Lower Valve Assembly – VLOM-50		
14	3.11	Cylinder Assembly – EDWP	Polythene bag	Cardboard box (maximum three numbers per box)
15	3.12A	Upper Valve Assembly – EDWP	Polythene bag, individually packed in cardboard carton	Cardboard box
16	3.12B	Lower Valve Assembly – EDWP		
17	4.1	Head – Standard	Covered with polyethylene bag, wrapped in straw rope with hessian cover	—
18	4.2	Head – EDWP		
19	4.4	Cover	Polyethylene bag	Wooden crate (maximum 32 numbers per crate)

Sl No.	**Sub-assembly/Component**		**Individual Packing**	**Bulk Packing**
	Identification/ Figure No.	*Nomenclature*		
20	4.5	Third Plate	Polyethylene bag	
21	4.6	Handle – Standard	Covered with polyethylene bag, wrapped in straw rope with hessian cover	—
22	4.7	Handle – EDWP		
23	4.9	Chain with coupling	Polyethylene bag (*see also* **C-6.2**)	Cardboard box
24	4.10	T-bar – EDWP	Polyethylene bag	Hessian cover (maximum weight not to exceed 50 kg per pack)
25	4.11	Counter Weight – EDWP		
26	4.12	Stand – Standard	Covered with polyethylene bag, wrapped in straw rope with hessian cover, M12 × 40 bolt with two nuts to be provided in each hole of top flange	—
27	4.13	Stand – EDWP		
28	4.15	Water Tank – 32		
29	4.16	Water Tank – 50		
30	4.17	Water Tank – 65		
31	4.19	Cone Plate – VLOM-65	Polyethylene bag	Hessian bag with straw packing (maximum weight not to exceed 50 kg per pack)
32	4.20	Cone Plate – VLOM-50		
33	4.21	Connecting Rod	Polyethylene (up to ten rods per bag) (*see also* **A-11.3**)	Hessian cover (maximum ten numbers per pack)
34	4.22	Plunger Rod – Standard	Polyethylene (up to ten rods per bag) (*see also* **A-11.3**)	Hessian cover (maximum twenty numbers per pack)
35	4.2	Plunger Rod – Long		
36	4.24	Handle Axle	Polyethylene sleeve with thread protector	Cardboard box
37	4.25	Push Rod	Polyethylene bag (up to 50 numbers per pack)	Cardboard box
38	4.26	Bearing Spacer	Polyethylene bag (up to 20 numbers per pack)	Cardboard box
39	4.27	Washer	Polyethylene bag (up to 100 numbers per pack)	Cardboard box
40	4.28	Socket 32 NB, seamless	Polyethylene cover	Cardboard box
41	4.29	Socket 50 NB, seamless		
42	4.30	Socket 65 NB, seamless		
43	5.1 and 6.1 A	Cylinder Body with Liner – Standard	Polyethylene bag with thread protector	Cardboard box (maximum weight not to exceed 50 kg per pack)
44	5.2 and 5.1B	Cylinder Body with Liner – Long		
45	5.3 and 6.1C	Cylinder Body with Liner – VLOM-50		

Sl No.	**Sub-assembly/Component**		**Individual Packing**	**Bulk Packing**
	Identification/ Figure No.	*Nomenclature*		
46	5.4	Reducer Cap	Polyethylene bag	Cardboard box
47	5.5A/5.5B	Cylinder Caps – VLOM-65		
48	5.6A/5.6B	Cylinder Caps – VLOM-50		
49	6.2	Plunger Yoke Body	Polyethylene cover and cardboard carton, individually	Cardboard box
50	6.3	Upper Value	Polyethylene cover and cardboard carton, maximum five per pack	Cardboard box
51	6.4	Bucker Spacer – Standard	Polyethylene cover and cardboard carton, maximum five per pack	Cardboard box
52	6.5	Bucket Spacer – Lower		
53	6.6	Follower – EDWP	Polyethylene cover with thread protector, and cardboard carton individually	Cardboard box
54	6.7	Follower – VLOM-65		
55	6.8	Follower – EDWP		
56	6.9	Check Valve – Standard	Polyethylene cover with thread protector, and cardboard carton individually	Cardboard box
57	6.10	Check Valve - Standard	Polyethylene cover and cardboard carton, maximum five per pack	Cardboard box
58	6.11	Rubber Seat Retainer	Polyethylene cover and cardboard carton	Cardboard box
59	6.12	Check Valve Seat – Standard	Polyethylene cover and cardboard carton	Cardboard box
60	6.13	Check Valve Seat – VLOM65	Polyethylene cover and cardboard carton, individually	Cardboard box
61	6.14	Cage – VLOM-65	Polyethylene cover and cardboard carton	Cardboard box
62	6.15	Plunger Body – VLOM-50	Polyethylene cover and cardboard carton	Cardboard box
63	6.16	Check Valve Body – VLOM-50	Polyethylene cover and cardboard carton	Cardboard box
64	7.1	Pump Bucket – Standard	Polyethylene cover and cardboard/plastic container, maximum ten per pack	Cardboard box
65	7.2	Pump Bucket – VLOM-50		Cardboard box
66	7.3	Sealing Ring – Standard	Polyethylene cover and cardboard /plastic container, maximum 50 numbers per pack	Cardboard box
67	7.4	Sealing Ring – VLOM-65		
68	7.5	Sealing Ring – VLOM-50		

Sl No.	**Sub-assembly/Component**		**Individual Packing**	**Bulk Packing**
	Identification/ Figure No.	*Nomenclature*		
69	7.6	Upper Valve Seating	Polyethylene cover and cardboard carton, maximum 100 numbers per pack	Cardboard box
70	7.7	Lower Valve Seating – Standard		
71	7.8	Lower Valve Seating – VLOM-65		
72	7.9	Bobbin	Polyethylene cover and cardboard carton	Cardboard box
73	7.10	O-Ring – VLOM-65	Polyethylene cover and cardboard carton	Cardboard box
74	7.11	O-Ring – VLOM-50		
75	7.12	Rubber Cone – VLOM-65	Polyethylene cover and cardboard carton	Cardboard box
76	7.13	Rubber Cone – VLOM-50		
77	7.14	Rubber Centralizer – VLOM-65	Polyethylene cover and cardboard carton	Cardboard box
78	7.15	Rubber Centralizer – VLOM-50		

STANDARD COMPONENTS

Sl No.	**Component**		**Individual Packing**	**Bulk Packing**
	Identification/ Figure No. in Annex B	*Nomenclature*		
79.	Std 01	Hexagonal Nut (SS) M6	Polyethylene bag, maximum 100 No. per bag	Cardboard box
80.	Std 02	Hexagonal Lock Nut M8	Polyethylene bag, maximum 100 No. per bag	Cardboard box
81.	Std 03	Nyloc Hexagonal Nut M10	Polyethylene bag, maximum 100 No. per bag	Cardboard box
82.	Std 04	Hexagonal Nut M12	Polyethylene bag, maximum 50 No. per bag	Cardboard box
83.	Std 05	Hexagonal Bolt (SS) M6 × 28	Polyethylene bag, maximum 50 No. per bag	Cardboard box
84.	Std 06	Hexagonal Bolt M8 × 20	Polyethylene bag, maximum 50 No. per bag	Cardboard box
85.	Std 07	Hexagonal M8 × 30	Polyethylene bag, maximum 50 No. per bag	Cardboard box
86.	Std 08	Hexagonal Socket Head Screw M8 × 30	Polyethylene bag, maximum 50 No. per bag	Cardboard box
87.	Std 09	Hexagonal Bolt M10 × 40-8.8	Polyethylene bag, maximum 50 No. per bag	Cardboard box
88.	Std 10	Hexagonal Bolt M12 × 20	Polyethylene bag, maximum 50 No. per bag	Cardboard box
89.	Std 11	Hexagonal Bolt M12 × 30	Polyethylene bag, maximum 50 No. per bag	Cardboard box
90.	Std 12	Hexagonal Bolt M12 × 40	Polyethylene bag, maximum 25 No. per bag	Cardboard box

Sl No.	**Component**		**Individual Packing**	**Bulk Packing**
	Identification/ Figure No. in Annex B	*Nomenclature*		
91.	Std 13	Hexagonal Bolt M12 × 100	Polyethylene bag, maximum 10 No. per bag	Cardboard box
92.	Std 14	Split Pin	Polyethylene bag, maximum 100 No. per bag	Cardboard box
93.	Std 15	Ball Bearing	Polyethylene cover and cardboard carton, individually	Cardboard box

NOTE —The cardboard box for bulk supply shall be of 7 ply corrugated fiber board (CFB) made of 120 GSM kraft paper with cloth inside. The box shall be sufficiently strapped with 12 mm polypropylene strap. The gross weight of the box with its contents shall not exceed 25 kg.

ANNEX D

[*Clause* 1.3 (Part 8)]

LIST OF TOOLS IN A SET OF SPECIAL TOOLS FOR INSTALLATION AND/OR MAINTENANCE

D-1 SET OF TOOLS FOR INSTALLATION AND MAINTENANCE OF STANDARD DEEPWELL AND EXTRA DEEPWELL HANDPUMPS

Sl No.	*Description*	*Qty.*	*Figure*
i)	Connecting rod vice	1 No.	8.1.1
ii)	Axle punch	1 No.	8.1.4
iii)	Chain coupler supporting tool	1 No.	8.1.5
iv)	Crank spanner	2 No.	8.1.6
v)	Connecting rod lifter	1 No.	8.1.7/8.1.8
vi)	Bearing pressing tool	2 No.	8.1.9
vii)	Rod coupler spanner	1 No.	8.1.10
viii)	Water tank lifter	3 No.	8.2.1
ix)	Pipe lifting spanner	1 No.	8.2.2
x)	Heavy duty clamp, or self-locking clamp	1 No. 1 No.	8.2.3 8.2.6
xi)	Tool box	1 No.	-

D-2 SET OF TOOLS FOR INSTALLATION AND/OR MAJOR REPAIR OF VLOM HANDPUMPS

D-2.1 For VLOM-65 Handpumps

Sl No.	*Description*	*Qty.*	*Figure*
i)	Connecting rod vice	1 No.	8.1.1
ii)	Axle punch	1 No.	8.1.4
iii)	Chain coupler supporting tool	1 No.	8.1.5
iv)	Crank spanner	2 No.	8.1.6
v)	Connecting rod lifter	1 No.	8.1.7/8.1.8
vi)	Bearing pressing tool	1 No.	8.1.9
vii)	Rod coupler spanner	2 No.	8.1.10
viii)	Water tank lifter	1 No.	8.3.1
ix)	Pipe lifting spanner	3 No.	8.3.2
x)	Heavy duty clamp	1 No.	8.3.3
xi)	Check valve puller	1 No.	8.3.6
xii)	Tool box	1 No.	–

D-2.1 For VLOM-50 Handpumps

Sl No.	*Description*	*Qty.*	*Figure*
i)	Connecting rod vice	1 No.	8.1.1
ii)	Axle punch	1 No.	8.1.4
iii)	Chain coupler supporting tool	1 No.	8.1.5
iv)	Crank spanner	2 No.	8.1.6
v)	Connecting rod lifter	1 No.	8.1.7/8.1.8
vi)	Bearing pressing tool	1 No.	8.1.9
vii)	Rod coupler spanner	2 No.	8.1.10
viii)	Water tank lifter	1 No.	8.3.1 A
ix)	Pipe lifting spanner	3 No.	8.3.2 A

Sl No.	*Description*	*Qty.*	*Figure*
x)	Heavy duty clamp	1 No.	8.3.3 A
xi)	Check valve puller	1 No.	8.3.6
xii)	Tool box	1 No.	-

D-3 SET OF SPECIAL TOOLS FOR MAINTENANCE OF VLOM HANDPUMPS (BOTH VLOM-65 AND VLOM-50)

Sl No.	*Description*	*Qty.*	*Figure*
i)	Connecting rod vice	1 No.	8.1.1
ii)	Axle punch	1 No.	8.1.4
iii)	Chain coupler supporting tool	1 No.	8.1.5
iv)	Crank spanner	2 No.	8.1.6
v)	Connecting rod lifter	1 No.	8.1.7/8.1.8
vi)	Bearing pressing tool	1 No.	8.1.9
vii)	Rod coupler spanner	2 No.	8.1.10
viii)	Water tank lifter	1 No.	8.3.1 A
ix)	Pipe lifting spanner	3 No.	8.3.2 A
x)	Heavy duty clamp	1 No.	8.3.3 A
xi)	Check valve puller	1 No.	8.3.6
xii)	Tool box	1 No.	-

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